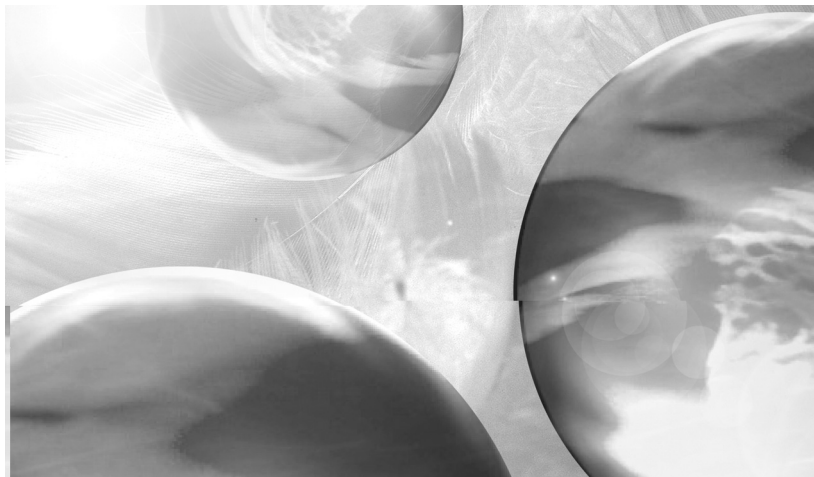


# Panasonic®

## Operating Instructions SD Video Camera

---

Model No. **SDR-S100**



Before connecting, operating or adjusting this product, please read the instructions completely.



**LEICA DICOMAR**

For USA assistance, please call: 1-800-272-7033 or, contact us via the web at:  
<http://www.panasonic.com/contactinfo>

For Canadian assistance, please call: 1-800-561-5505 or visit us at [www.panasonic.ca](http://www.panasonic.ca)



VQT0T50

Before opening the CD-ROM package, please read the following.

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# Information for your safety

## **WARNING**

**TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE ONLY THE RECOMMENDED ACCESSORIES AND DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE. DO NOT REMOVE THE COVER (OR BACK); THERE ARE NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

**THE SOCKET OUTLET SHALL BE INSTALLED NEAR THE EQUIPMENT AND SHALL BE EASILY ACCESSIBLE.**

## **CAUTION**

**Danger of explosion if battery is incorrectly replaced.**

**Replace only with the same or equivalent type recommended by the manufacturer.**

**Dispose of used batteries according to the manufacturer's instructions.**

## **IMPORTANT**

### **■ Carefully observe copyright laws**

**Whatever you have recorded and created can be used for your personal entertainment only. Under copyright laws, other materials cannot be used without obtaining permission from the holders of the copyrights.**

- **Injury or material damage resulting from any kind of use that is not in accordance with the operating instructions are the sole responsibility of the user.**
- If the SD Video Camera is used continuously for a long time or used at a high ambient temperature, red, blue, green or white dots may appear on the screen and be recorded on a still picture. This is due to the temperature of the SD Video Camera increasing. This is not a malfunction. Under this condition, turn the SD Video Camera off and leave it for a while.
- The manufacturer shall in no event be liable for the loss of recordings due to malfunction or defect of this SD Video Camera, its accessories or Memory Card.
- Note that the SD Video Camera may not play the data recorded or created on another product and another product may not play the data recorded on the SD Video Camera.
- The nameplate of the SD Video Camera is fixed on the bottom of the battery compartment.

### FCC Note: (U.S. only)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**FCC Caution:** To assure continued compliance, follow the attached installation instructions and use only shielded interface cables with ferrite core when connecting to computer or peripheral devices. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Trade Name: Panasonic

Model No.: SDR-S100

Responsible party:

Panasonic Corporation of North America  
One Panasonic Way, Secaucus, NJ 07094

Support Contact:

Panasonic Consumer Electronics Company  
1-800-272-7033 This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Class B

This Class B digital apparatus complies with Canadian ICES-003.

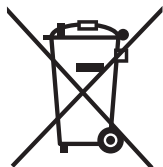
**A lithium ion/polymer battery that is recyclable powers the product you have purchased. Please call 1-800-8-BATTERY for information on how to recycle this battery.**

U.S. Patent Nos. 4,631,603, 4,577,216, 4,819,098, and 4,907,093.

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited consumer uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

### **-If you see this symbol-**

#### **Information on Disposal in other Countries outside the European Union**



This symbol is only valid in the European Union.  
If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.

## **Introduction**

### **Dear Customer,**

We would like to take this opportunity to thank you for purchasing this Panasonic SD Video Camera. Please read these Operating Instructions carefully and keep them handy for future reference.

### **■ Try out the SD Video Camera**

Be sure to try out the SD Video Camera before recording your first important event and check that it records properly and functions correctly.

### **■ About the photographs and illustrations in these operating instructions**

Please note that the actual controls and components, menu items, etc. of your SD Video Camera may look somewhat different from those shown in the illustrations in these Operating Instructions.

### **■ Pages for reference**

Pages that you should refer to are shown as **(P00)**.

### **■ Use only the recommended accessories.**

- Do not use any other multi cables and USB cables except the supplied one.
- When you use headphones which are sold separately, please make sure the total length of the headphones including the headphone adaptor is less than 3 m (9.9 feet).

### ■ Cards that you can use with this unit





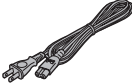





On this unit, you can use SD Memory Cards (up to 2 GB).

8 MB, 16 MB

- on the software or the product without the written authorization of the manufacturer.
- Panasonic will not be responsible for damages sustained from the use of this product or for trouble occurring therefrom.
- Panasonic will also in no way be responsible for any losses of data caused by the use of this product.
- For the purposes of these operating instructions, the battery pack is referred to as “the battery” and the SD Memory Card as “the SD card.”

# Accessories

Check the accessories before using this unit.

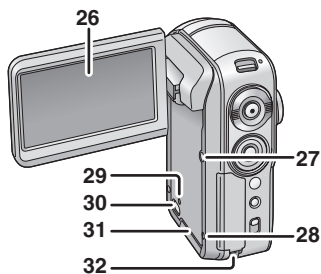
<b>SD Memory Card</b> <b>(2 GB)</b> RP-SDQ02G 	<b>Wireless remote control</b> N2QACC000008 <b>Button-type battery</b> CR2025 
<b>Battery pack</b> CGA-S303 	<b>Hand strap</b> VFC4127 
<b>AC cable</b> K2CA2CA00025 	<b>USB cable</b> VFA0454 
<b>AC adaptor</b> VSK0681 	<b>Headphone cable</b> K2KZ99Z00001 
<b>Multi cable</b> K2KZ9CB00001 	<b>CD-ROM</b> 

Optional Accessory

Battery Pack

CGA-S303





## 26 LCD monitor (P21, 107)

Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the LCD monitor screen. However, this is not a malfunction and does not affect the recorded picture.

## 27 Power LCD button [POWER LCD] (P30)

## 28 Reset button [RESET] (P101)

## 29 Card access lamp [ACCESS] (P15)

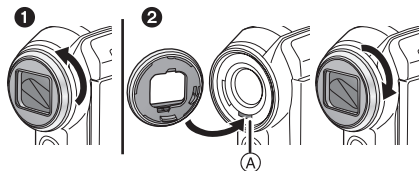
## 30 Card slot open lever (P14)

## 31 Card slot cover (P14)

## 32 Strap fixture (P12)

## Lens hood

- ❶ In order to remove the lens hood, rotate it counter-clockwise.
- ❷ In order to fit it, put into slot ❸, and then rotate it clockwise.

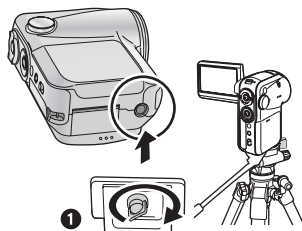


## Tripod mount

This is a hole for attaching this unit to a tripod (optional). (Please carefully read the operating instructions for how to attach the tripod to the unit.) This unit does not have a hole for a tripod pin so attach it to a tripod without a tripod pin. If you try to forcibly attach this unit to a tripod with a fixed tripod pin, this unit may get scratched or damaged.

- When a tripod is used, you can perform operations easily using the remote control.
- When the tripod is used, the card slot cover and battery cover cannot be opened. Insert an SD card or the battery before attaching this unit to the tripod. (P14, 16)

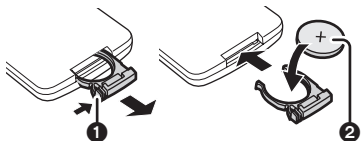
### ❶ Camera base







## ■ Install a button-type battery (supplied) in the remote control



- 1) While pressing the stopper ❶, pull out the battery holder.
- 2) Set the button-type battery with its (+) mark facing upward ❷ and get the battery holder back in place.

## ■ About the button-type battery

- When the button-type battery runs down, replace it with a new battery (CR2025).  
The battery typically lasts about one year; the actual life may be less with heavy use.
- Keep the button-type battery out of the reach of children.

### Warning

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

Risk of fire, explosion and burns. Do not recharge, disassemble, heat above 100 °C (212 °F) or incinerate. Keep the Button-Type battery out of the reach of children. Never put Button-Type battery in mouth. If swallowed, call your doctor.

Replace battery with Panasonic PART NO. CR2025 only. Use of another battery may present a risk of fire or explosion. Caution: Battery may explode if mistreated.

Dispose of used battery promptly. Keep away from children.

Do not recharge, disassemble or dispose of in fire.

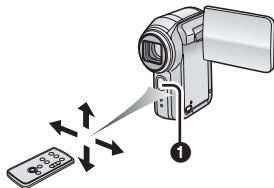
## ■ Remote control usable range

The distance between the remote control and the unit: Within approx. 5 m (15 feet)

Angle: Approx. 10° up and 15° down, left, and right

### ❶ Remote control sensor

- The remote control is intended for indoor operation. Outdoors or under strong light, this unit may not operate properly even within the usable ranges.



## ■ Operating with remote control (P26)

The menu screen transition is the same as when the buttons on the main unit are used.



### 1) Press the [MENU] button.

### 2) Select a menu item.

- The play/pause button [▶||], stop button [■], Fast-rewind button [◀◀], Fast-forward button [▶▶] and [ENTER] button can be used in place of pressing the cursor button up, down, left, right and the button in the center on this unit.

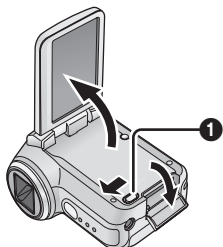
### 3) Press the [ENTER] button to exit the menu screen.

## Inserting/Removing an SD card

**Before inserting/removing an SD card, be sure to turn the power [OFF]. (P18)**

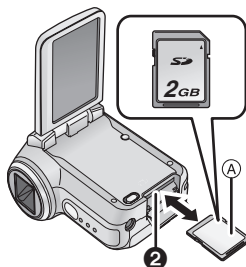
If the SD card is inserted or removed with the power turned on, this unit may malfunction or the data recorded on the SD card may be lost.

**1**



**Open the LCD monitor and then slide the card slot open lever ① to open the card slot cover.**

**2**

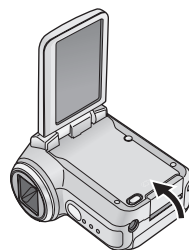


**Insert/remove the SD card into/from the card slot ②.**

Ⓐ Label side



- When inserting an SD card, face the label side towards you and press it straight in with one stroke as far as it goes.
- When removing the SD card, open the card slot cover and press the center of the SD card and then pull it straight out.

**3**



**Securely close the card slot cover.**

## ■ About the SD Memory Cards that you can use

Recording mode	SD card capacity		
	8 MB, 16 MB	32 MB, 64 MB, 128 MB	256 MB, 512 MB, 1 GB, 2 GB (Maximum)
 Motion picture recording mode	Cannot be used.	Cannot be guaranteed in operation*	Refer to page 34.
 Still picture recording mode	Can be used.		

\* The recording may suddenly stop during motion picture recording. (P35)

## ■ About the SD card

- Do not touch the terminals on the back of the SD card.
- Electrical noise, static electricity, or failure of this unit or the SD card may damage or erase the data stored on the SD card. We recommend saving important data on a PC by using the USB cable (supplied) or MotionSD STUDIO. (P73) (When saving images recorded using this unit to a PC, you must use MotionSD STUDIO. )
- When using an SD card on which data has been written many times, the remaining time left for recording may be reduced. (P35)

## ■ About the card access lamp

- When this unit accesses the SD card (reading, recording, playback, erasing, etc.), the access lamp lights up.
- If the following operations are performed when the access lamp is lit, then the SD card or the recorded data may be damaged or this unit may malfunction.
  - Opening the card slot cover and inserting or removing the SD card.
  - Operating the [ON/OFF] switch or the mode dial.

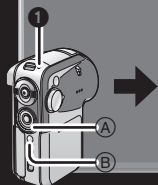
## ■ About the write protection switch on the SD Memory Card

- The SD Memory Card has a write protection switch ❶ on it. If the switch is moved to [LOCK], you cannot write to the SD card, delete the data on it or format it. If it is moved back, you can.











## To cancel quick start

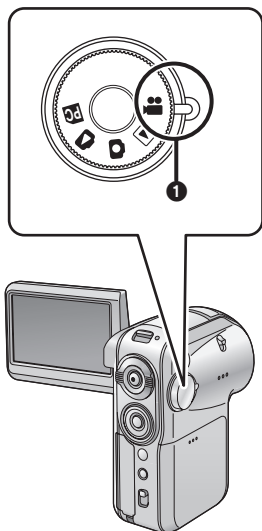
Press the menu button, use the cursor button to select [  SETUP ]→  
[  QUICK START ]→[OFF]. (P26)

---

- To cancel quick start standby, turn off the power.
- Quick start standby is canceled after 5 minutes have elapsed.  
In this case, the unit cannot be quick-started and it takes longer for it to start operating.
- Quick start standby is canceled if the mode dial is switched to a mode other than motion picture recording mode or still picture recording mode.
- Since about half the power of normal recording is used in quick start standby, using quick start reduces the recordable time.
- If quick start is not set, it takes longer for this unit to start operating, but the amount of power consumed when the LCD monitor is closed is reduced.
- When the LCD monitor is opened in quick start standby status, the zoom magnification is set to the 1× (approximately). This may cause the size of the image to be different from the size before standby status was established.
- When this unit is quick-started with the white balance on automatic, it may take some time until the white balance is adjusted if the scene being recorded has a light source different from the scene last recorded. (When the MagicPix function is used, however, the white balance of the scene last recorded is retained.)

## Selecting a mode

The Mode Dial is used to switch between recording and playback modes.  
Rotate the mode dial slowly but surely.  
Set the desired mode ①.



**Rotate the mode dial, and set the desired mode pictograph to the position shown in the illustration.**

### **Motion picture recording mode (P33)**

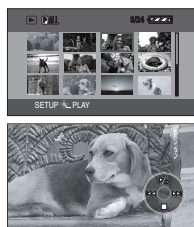
Use this to record motion pictures (MPEG2).

The unit can be used as a Web camera when it is connected to a PC.



### **Motion picture playback mode (P57)**

Use this to play back motion pictures recorded with this unit.



### **Still picture recording mode (P50)**



Use this to record still pictures (JPEG).  
The unit can be used as a Web camera when it is connected to a PC.

### **Still picture playback mode (P60)**



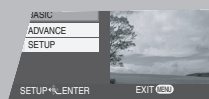
Use this to play back still pictures recorded with this unit.

### **PC Connection mode (P73)**

Use MotionSD STUDIO (This can be installed from the supplied CD-ROM.) to view an SD card's pictures on a PC or to import them to a PC.





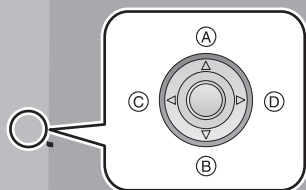
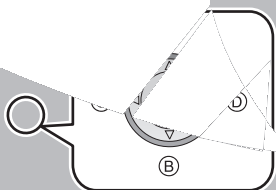


for button operation

style

CD monit

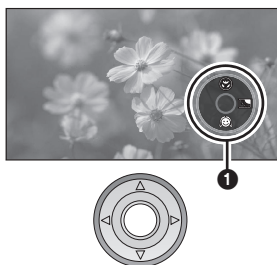
positions of the curs



## Using the recording function

◇ When the mode dial is at the  or  position

1



**Press the button in the center.**

① An operation icon appears on the LCD monitor.

While an operation icon is displayed, a blue border appears around the outside of the button in the centre of the cursor button.

- Each time the button in the center is pressed, the indication changes.

2



**Press the cursor button up, down, left or right to make a selection.**

## Playback

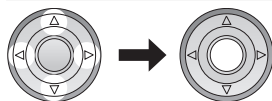
◇ When the mode dial is at the  or  position

1



**Press the cursor button up, down, left or right to select the file, and then press the button in the center.**

All the scenes are displayed and an operation icon automatically appears.



2




**Press the cursor button up, down, left or right to proceed with the operation.**

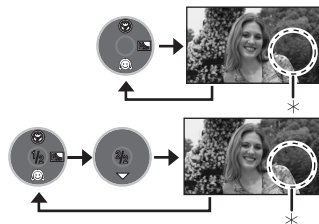
### About the operation icons which are displayed

Each time the button in the center is pressed while an operation icon is displayed, the indication changes as shown below.

\* The operation icon is off.

 **Motion picture recording mode**  
([AUTO/MANUAL/FOCUS]  
switch is set to [AUTO])

([AUTO/MANUAL/FOCUS] switch is set  
to [MANUAL])



---

#### Motion picture playback mode

- The indication can also be changed during playback.



---

**Still picture recording mode**  
([AUTO/MANUAL/FOCUS]  
switch is set to [AUTO])

([AUTO/MANUAL/FOCUS]  
switch is set to [MANUAL])

---































#### Still picture playback mode

- The indication can also be changed during playback.

(When [PICTURE] is selected)

(When [SLIDE SHOW] is selected)

## List of operation icons for each mode

Mode		Icon	Direction	Function
 <b>Motion picture recording mode</b>	(1/2)		 ▲	<b>Tele-macro (P37)</b>
			 ▼	<b>Soft skin mode (P38)</b>
			 ►	<b>Backlight compensation (P39)</b>
	(2/2)	 (Only in [MANUAL] )	 ▲	<b>Manual adjustment mode (P47)</b> (Only in manual white balance adjustment)
			 ▼	<b>White balance (P46)</b>
				<b>Shutter speed (P48)</b>
				<b>Iris or gain value (P48)</b>
			 +  -	<b>White balance mode selection, manual adjustments (P45, 46, 48)</b>
 <b>Motion picture playback mode</b>	—		 ▲	<b>Playback/pause (P57)</b>
			 ▼	<b>Stop playback and show thumbnails (P57)</b>
			 ◀	<b>Rewind, skip (during playback) (P57)</b>
			 ◀	<b>Reverse slow/frame playback (during pause) (P58)</b>
			 ▶	<b>Fast forward, skip (during playback) (P57)</b>
			 ▶	<b>Forward slow/frame playback (during pause) (P58)</b>
 <b>Still picture recording mode</b>	(1/2)		 ▲	<b>Tele-macro (P37)</b>
			 ▼	<b>Soft skin mode (P38)</b>
			 ◀	<b>Self timer (P56)</b>
			 ►	<b>Backlight compensation (P39)</b>
	(2/2)	Same as motion picture recording mode (2/2)		
 <b>Still picture playback mode</b>	—		 ▲	<b>Slide show start/pause (P60)</b> (Only when [SLIDE SHOW] has been selected.)
			 ▼	<b>Stop playback and show thumbnails (P60)</b>
			 ◀	<b>Playback previous picture (P60)</b>
			 ▶	<b>Playback next picture (P60)</b>



5



Press the cursor button right or press the button in the center.

---

6

Press the cursor button up or down in order to select the desired item.

---

7

Press the button in the center to enter the selection or press the cursor button left to get back to the previous screen.

---

### To exit the menu screen

Press the [MENU] button.

### To get back to the previous screen

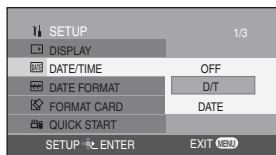
Press the cursor button left.

- 
- If you change the settings for [WIDE] (P40), [PICTURE SIZE] (P52) or [TV ASPECT] (P71), the screen size changes. (If you change [PICTURE SIZE] to or from [HDTV], the size changes.)





## Changing the date and time display style



Press the menu button, select [ SETUP ] → [ DATE/TIME ], then use the cursor button to select the desired display style. (P26)

- The date and time display can also be changed by pressing the [DATE/TIME] button on the remote control.

[DATE]

DEC 15 2005

[D/T]

3:42 PM  
DEC 15 2005

[OFF]

### ■ About date/time

- The date and time function are driven by a built-in lithium battery.
- Make sure to check the time before recording because the built-in clock is not very accurate.
- If [O ] or [—] is indicated when this unit is turned on, then the built-in lithium battery runs down. After charging the battery using the steps below, set the clock.

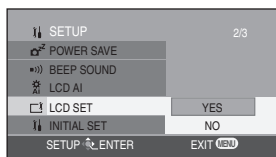
### ■ Charging the built-in battery for the date

- Connect the AC adaptor to this unit or place the battery on this unit, and the built-in lithium battery will be recharged. Leave this unit as is for approx. 24 hours, and the battery will save the date and time for approx. 6 months. (Even if the [ON/OFF] switch is set to [OFF], the battery is still being recharged.)

## Adjusting LCD monitor

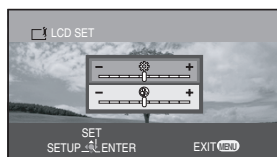
### Adjusting the brightness and color level of the LCD monitor

1



Press the menu button, then use the cursor button to set [ SETUP ] → [ LCD SET ] → [YES]. (P26)

2



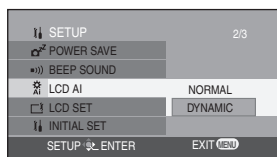
Press the cursor button up or down to select the item to be adjusted. Then, press the cursor button left or right to make the adjustment.

The bar display moves.

- : Brightness of the LCD monitor
- : Color level of the LCD monitor

- These settings will not affect the images actually recorded.

### Changing the picture quality on the LCD monitor (LCD AI)



Press the menu button, then use the cursor button to select

[ SETUP] → [ LCD AI] → [DYNAMIC] or [NORMAL]. (P26)

– [DYNAMIC]:

The image on the LCD monitor becomes clear and vivid.

– [NORMAL]:

Switches to the standard picture quality.

- When [DYNAMIC] is set, the LCD monitor is set to the color level and brightness optimally suited for the particular scenes to be recorded. Crisp and bright images will be displayed.
- The effect will vary depending on the scene recorded.
- This function is automatically set to [DYNAMIC] when the brightness of the LCD monitor is increased (when [] is displayed) and cannot be set to [NORMAL] independently.
- This will not affect the images to be recorded.

### In order to increase the brightness of the entire LCD monitor



Press the [POWER LCD] button.



[] appears on the LCD monitor.

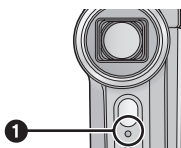
- If the [POWER LCD] button is pressed, the entire LCD monitor will become approx. twice as bright as the normal.
- LCD stands for Liquid Crystal Display, and in this context refers to the LCD monitor.



### ■ About the indication lamp ①

The indication lamp flashes when signals from the remote control are sensed and during self-timer operation.

When [  REC LAMP ] in [  ADVANCE ] is set to [ON], the lamp lights during recording. You can therefore confirm recording when this unit is attached to a tripod or when using the remote control.

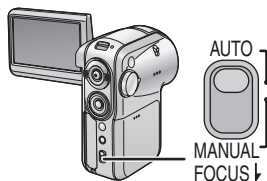


### ■ About the auto mode

- Set the [AUTO/MANUAL/FOCUS] switch to [AUTO], and color balance (white balance) and focusing will be adjusted automatically.

(The [ **AUTO** ] indication appears on the screen.)

- Automatic white balance: P103
- Auto focus: P104

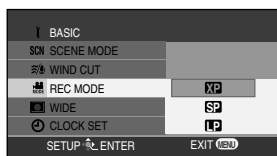





## Motion picture recording (MPEG2 motion pictures) (continued)

### Changing the recording mode of the motion picture

1



Press the menu button, then use the cursor button to select the desired recording mode by selecting [ ] BASIC]→[  REC MODE]. (P26)

— **XP** :

Motion pictures can be recorded with the highest picture quality.

— **SP** :

Motion pictures can be recorded with normal picture quality.

— **LP** :

Motion pictures can be recorded for longer.

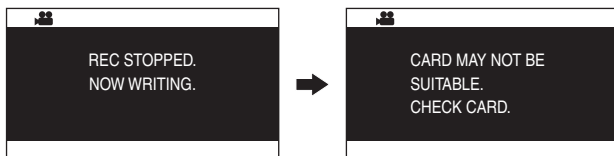
### ■ About the kinds of SD cards that can be used

We recommend using the following SD Memory Cards made by Panasonic for motion picture recording.

SD card memory	Pro High Speed SD Memory Card	Super High Speed SD Memory Card	High Speed SD Memory Card
256 MB	—	RP-SDH256	—
512 MB	RP-SDK512	RP-SDH512*	—

## ■ When recording stops suddenly during motion picture recording

When using an SD card on which data has been written many times and the data writing speed has reduced, the recording may suddenly stop during motion picture recording. At this time, the following message will appear:





## When using an SD card (P34) that can be used for motion picture recording

When this kind of message appears, it is recommended that you format the SD card being used. (P65) When an SD card is formatted, all the data recorded on it will be deleted so copy valuable data to the PC prior to formatting. (P80) (When copying data recorded using this unit, you must use MotionSD STUDIO. (P73))

## When using any other card

When motion pictures are to be recorded, use a Panasonic SD card or another SD card which can be used to record motion pictures. (P34)

- **Recordable time using the battery (P17)**
- 8 MB and 16 MB SD cards cannot be used for motion picture recording.
- If the write protection switch on the SD card is set to [LOCK], it cannot be used for recording. (P15)
- Even if there is available memory for recording on the SD card, it may not be possible to record.
- The sound is recorded in stereo.
- The recorded scenes are recorded on the SD card as one motion picture scene.
- When recording is resumed after it was stopped, the scenes will be saved in a different scene.
- When recording motion pictures, do not remove the battery or disconnect the AC adaptor. Also do not remove the SD card while the [ACCESS] lamp is lit. If you do either of the above, a restore motion picture scene message is displayed when the SD card is next inserted or the power is turned back on. Be sure to restore the motion picture scene. (P96)
- Mosaic-pattern noise may appear on a playback image in the following cases.
  - When there is a complicated pattern in the background
  - When the unit is moved too much or too fast
  - When a subject with sharp movements has been recorded  
(Particularly if [  REC MODE ] was set to [  ] during recording.)

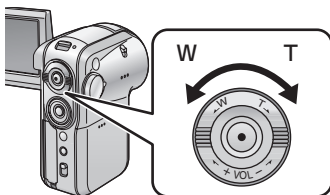
# Zoom in/out function

This is for moving the zoom lever to adjust the magnification.

You can make people and objects appear closer and landscapes can be recorded in wide angle. You can zoom in up to 10× optically.

◇ Rotate the mode dial to select  or .

1



**Move the zoom lever.**

- **T side:** To bring distant people or objects appear closer for recording (zoom in)
- **W side:** To make sights appear more distant for recording (zoom out)

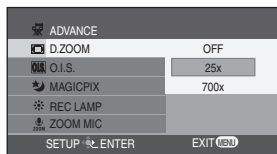




- When zooming in and taking a picture while holding this unit by hand, we recommend using the image stabilizer function. (P41)
- When distant subjects are brought closer, they are focused at about 1 m (3.3 feet) or more.
- When the zoom speed is high, the subject may not be focused easily.
- When the zoom magnification is 1×, this unit can focus on a subject approx. 4 cm (1.6 inch) distant from the lens. (Macro function)
- The zoom speed varies depending on the range over which the zoom lever is moved.

## This brings distant subjects even closer for recording (digital zoom)

If the zoom magnification exceeds 10×, then the digital zoom function will be activated. The maximum magnification provided by the digital zoom can be switched.

◇ Rotate the mode dial to select .



**Press the menu button, use the cursor button to select [  ADVANCE ] → [  D.ZOOM ], then set the desired magnification. (P26)**

- **OFF:** Optical zoom only (Up to 10×)
- **[25×]:** Up to 25×
- **[700×]:** Up to 700×

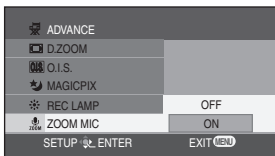
- The larger the digital zoom magnification, the more the image quality is degraded.
- This function cannot be used in still picture recording mode.



## ■ To use the zoom microphone function

Interlocked with the zooming operation, the microphone will collect sounds clearly far away with the tele-shot or those in the vicinity with the wide-angle shot.

### ◇ Rotate the mode dial to select .



Press the menu button, then use the cursor button to select

[ ADVANCE] → [ ZOOM MIC] → [ON]. (P26)

## Tele-macro function

This is for bringing only what you want to record into focus to take close-ups.

By focusing only on the subject and blurring the background, the image can be impressive. This unit can focus on the subject at a distance of approx. 50 cm (20 inch).

### ◇ Rotate the mode dial to select or .


1




Press the button in the center of the cursor button to display the icon shown in the illustration.

2



Press the cursor button up, then select the [] tele-macro icon.

- If the magnification is 10× or less, then it is automatically set to 10×.
- The [] icon flashes orange, then lights white.

## To cancel the tele-macro function

Select the [] icon again.

- If a sharper focus cannot be achieved, adjust the focus manually. (P45)
- In the following cases, the tele-macro function is canceled automatically.
  - The zoom magnification becomes lower than 10×.
  - The power is turned off or the mode dial is set to a mode other than motion picture recording mode or still picture recording mode.

## Soft skin mode

This makes skin colors appear softer for a more attractive appearance.

This is more effective if you record the bust image of a person.

◇ Rotate the mode dial to select  or .


1



Press the button in the center of the cursor button to display the icon shown in the illustration.

2



Press the cursor button down, then select the [  ] soft skin icon.

- The [  ] icon changes orange, then lights white.

### To cancel the soft skin mode

Select the [  ] icon again.

# Backlight compensation function

This is for protecting a backlit subject from being darkened.

Use this function when the light is emanating from behind the subject and the subject appears dark.

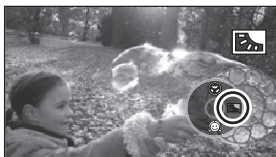
◇ Rotate the mode dial to select  or .

1



Press the button in the center of the cursor button to display the icon shown in the illustration.

2



Press the cursor button right, then select the [<sup>a</sup>] backlight compensation icon.

- The [<sup>a</sup>] icon flashes orange, then lights white.
- The image on the screen will become brighter.

## To return to normal recording

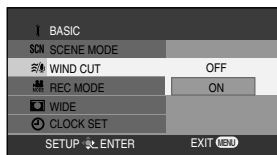
Select the [<sup>a</sup>] icon again.

- In the following case, the backlight compensation is canceled automatically.
  - The power is turned off or the mode dial is set to a mode other than motion picture recording mode or still picture recording mode.

## Wind noise reduction function

This is for reducing the wind noise coming into the microphone when recording.

◇ Rotate the mode dial to select .





Press the menu button, then use the cursor button to select

[  BASIC ] → [  WIND CUT ] → [ ON ]. (P26)

## To cancel the wind noise reduction function

Press the menu button, then use the cursor button to select

[  BASIC ] → [  WIND CUT ] → [ OFF ]. (P26)

- This function's default setting is [ON].
- Reduces the wind noise depending on the wind strength. (If this function is activated in strong winds, the stereo effect may be reduced. When the wind weakens, the stereo effect will be restored.)

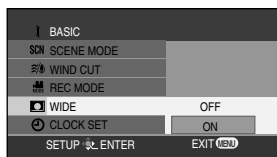
## Wide mode

This is for selecting the screen's aspect ratio when recording motion pictures.

This allows you to record images compatible with wide-screen TVs (16:9) and regular TVs (4:3).

### ■ Recording images with a 16:9 aspect ratio

◇ Rotate the mode dial to select .

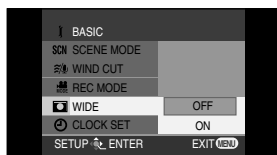


Press the menu button, then use the cursor button to select

[  BASIC ] → [  WIDE ] → [ ON ]. (P26)

### ■ Recording images with a 4:3 aspect ratio

◇ Rotate the mode dial to select .



Press the menu button, then use the cursor button to select

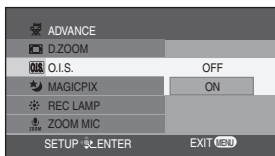
[  BASIC ] → [  WIDE ] → [ OFF ]. (P26)

# Image stabilizer function



This is for reducing image shakes during recording.

Reduces the image shaking due to hand movement when recording.

◆ Rotate the mode dial to select  or .



Press the menu button, then use the cursor button to select

[ ADVANCE] → [ O.I.S.] → [ON].  
(P26)

## To cancel the image stabilizer function

Press the menu button, then use the cursor button to select

[ ADVANCE] → [ O.I.S.] → [OFF]. (P26)

- In still picture recording mode, pressing the record button halfway increases the effect of the image stabilizer function. (MEGA OIS)
- When a tripod is used, we recommend that you turn the image stabilizer off.
- It may not be possible to compensate for image shake when the unit is shaken greatly or the person recording is chasing a fast-moving subject to record it.
- In the following case, the image stabilizer function may not work effectively.
  - When the digital zoom is used

# MagicPix functions

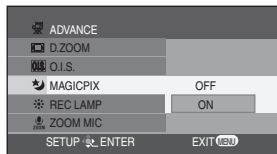
This allows recording in dark locations.

This function allows you to record color subjects in dark locations to stand out against the background.



Attach this unit to a tripod, and you can record images free from vibration.

- Recorded scene is seen as if frames were missed.

## ◇ Rotate the mode dial to select .



**Press the menu button, then use the cursor button to select**

**[ ADVANCE] → [ MAGICPIX] → [ON]. (P26)**

After exiting the menu screen, the unit is in manual focus mode. Press the cursor button left or right to bring the subject into focus manually. (P45)

In the following cases, press the button in the center of the cursor button twice to display the manual focus indication and then focus the subject.

- If MagicPix is set to [ON] when it has already been set to [ON].
- If the mode is changed when MagicPix is set to [ON].

---

## To cancel the MagicPix function

Press the menu button, then use the cursor button to select

**[ ADVANCE] → [ MAGICPIX] → [OFF]. (P26)**

- 
- If set in a bright place, the screen may become whitish for a while.
  - The MagicPix function makes the signal charging time of CCD up to approximately 30× longer than usual, so that dark scenes invisible to the naked eye can be recorded brightly. For this reason, bright dots that are usually invisible may be seen, but this is not a malfunction.
  - If you turn off the power, the MagicPix function is canceled.

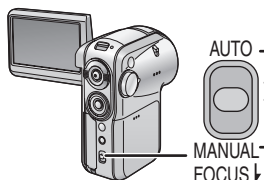
# Scene mode

This is for recording in various situations.

When you record images in different situations, this mode automatically sets optimum shutter speeds and apertures.

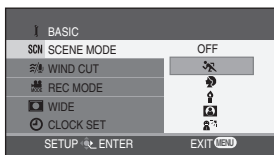
◇ Rotate the mode dial to select  or .


1







Set the [AUTO/MANUAL/FOCUS] switch to [MANUAL].

2



Press the menu button, use the cursor button to select [  BASIC ] → [ SCN SCENE MODE ], then select the desired mode. (P26)

Indication	Mode	Recording conditions
5	<b>Sports</b>	To record sports scenes or scenes where there are quick motions
	<b>Portrait</b>	To make persons stand out against the background
	<b>Low light</b>	To make the scene lighter at dusk or other dark times
	<b>Spotlight</b>	To make the subject under a spotlight look more attractive
	<b>Surf &amp; snow</b>	To record images at dazzling places such as ski slopes and beaches

## To cancel the scene mode function

Press the menu button, then use the cursor button to select

[  BASIC ] → [ SCN SCENE MODE ] → [OFF]. (P26)

- You can also cancel the scene mode function by setting the [AUTO/MANUAL/ FOCUS] switch to [AUTO].

### Sports mode

- For slow-motion playback or playback pause of recorded scenes, this mode prevents camera shakes.
- During normal playback, the scene movement may not look smooth.
- Avoid recording under fluorescent light, mercury light or sodium light because the color and brightness of the playback scene may change.
- If you record a subject illuminated with strong light or a highly reflective subject, vertical lines of light may appear.
- If the brightness is insufficient, the sports mode does not function. The [5 ] indication flashes.
- If this mode is used indoors, the screen may flicker.

### Portrait mode

- If this mode is used indoors, the screen may flicker. If this happens, change the scene mode setting to [OFF].

### Low light mode

- Extremely dark scenes may not be able to be recorded finely.

### Spotlight mode

- If the recording subject is extremely bright, the recorded scene may become whitish and the periphery of the recorded scene extremely dark.

### Surf & snow mode

- If the recording subject is extremely bright, the recorded scene may become whitish.



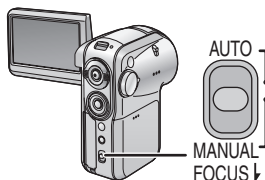
# Manual focus adjustment

This allows subjects to be focused manually.

If auto focusing is difficult due to the conditions, then manual focusing is available.

◇ Rotate the mode dial to select  or .

1



Set the [AUTO/MANUAL/FOCUS] switch to [MANUAL].

2



Move the switch down and set it to the [FOCUS] position.

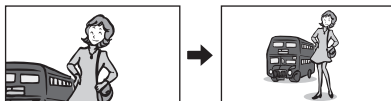
- The manual focus indication [▶MF] will be displayed.

3



Press the cursor button left or right to bring the subject into focus.

- When focused with a wide angle, the subject may not be in focus when zoomed in. First, zoom in on the subject, and then focus on it.



## To restore to the automatic adjustment

Move the [AUTO/MANUAL/FOCUS] switch down again to the [FOCUS] position.

- You can also restore the auto focusing by setting the [AUTO/MANUAL/FOCUS] switch to [AUTO].

# White balance

This is for recording in natural colours.

The automatic white balance function may not reproduce natural colours depending on the scenes or lighting conditions. If so, you can adjust the white balance manually.

◆ Rotate the mode dial to select  or .

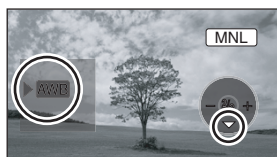
1



Set the [AUTO/MANUAL/FOCUS] switch to [MANUAL].

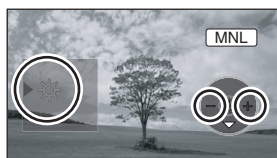
The icon shown in the illustration is displayed automatically.

2






Press the cursor button down to select the white balance indication (such as **AWB** ).

3



Press the cursor button left or right to select the white balance mode.

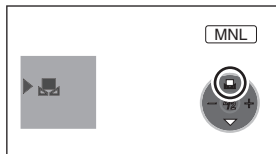
Indication	Mode	Recording conditions
<b>AWB</b>	Auto white balance adjustment	
	Indoor mode (for recording under incandescent lamps)	Incandescent lights, halogen lamps
	Outdoor mode	Outdoors under a clear sky
	Manual adjustment mode	Mercury-vapor lamps, sodium lamps, some fluorescent lights Lights used for wedding receptions at hotels, stage spotlights in theatres, sunrise, sunset, etc.



## To restore to the automatic adjustment


Set the white balance mode to [**AWB** ].

- You can also restore the automatic adjustment by [AUTO/MANUAL/FOCUS] switch to [AUTO].

## To set the white balance manually



Select [  ] mode, fill the screen with a white subject and then press the cursor button up to select the [  ] indication.

- When the [  ] display changes from flashing to on, setting is complete.

---

## About flashing of the [ ] indication


### When the manual adjustment mode is selected

- Flashing indicates that the white balance previously adjusted is stored. This setting is stored until the white balance is adjusted again.

### When white balance cannot be set in the manual adjustment mode

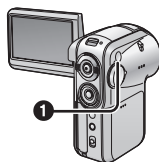
- White balance may not be adjusted properly in the manual adjustment mode in dark places. If so, use the auto white balance mode.

### During setting in the manual adjustment mode

- The [  ] indication flashes while settings are being performed in set mode. Upon completion of the settings, it stops flashing and lights instead.

## ■ About the white balance sensor

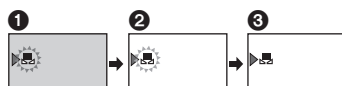
Do not cover the white balance sensor ❶ during recording, or it may not function properly.



## ■ About the black balance adjustment

This is one of the 3CCD system functions that automatically adjusts the black when the white balance is set in the manual adjustment mode. When the black balance is adjusted, the screen will temporarily be black. (The black balance cannot be adjusted manually.)

- ❶ Black balance adjustment in progress (flashes)
- ❷ White balance adjustment in progress (flashes)
- ❸ Adjustment completed (lights)



- 
- When setting both the white balance and the iris/gain, set the white balance first.
  - Whenever recording conditions change, re-set the white balance for correct adjustment.

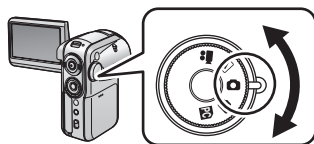




## Still picture recording (JPEG still pictures)

For the number of still pictures to be recorded on an SD card, refer to P88.

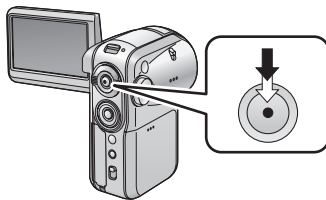
1



**Rotate the mode dial to select .**

The lens cover opens automatically.

2



**Press the record button halfway (not all the way down) to bring the subject into focus.** (In auto focusing mode only)

① Shutter chance mark

② Focus area

③ Shutter speed

④ Iris/gain

The shutter speed and the iris/gain value are fixed and the unit focuses on the subject automatically.

- When the record button is pressed halfway, the shutter chance mark is indicated as follows.

- ○ (The white lamp flashes.):

- Focusing

- ● (The green lamp lights up.):

- When in focus (Beeps twice)

- No mark: When focusing is unsuccessful (2 beeps 4 times)

- If you set [O.I.S.] to [ON] (P41), then the image stabilizer function will be more effective. ([MEGA] will be indicated.)

- The shutter chance mark is indicated as follows when the record button is not pressed halfway. Please use it as a guide for recording.

- ● (The green lamp lights up.):

- When in focus and a good picture can be recorded

- ○ (The white lamp lights up.):

- Almost in focus

3



**Press the record button all the way down (as far as it will go) to record.**

---

### **To record still pictures clearly**

- When zooming in on the subject with a magnification of 4× to 10×, it is difficult to reduce the slight shaking from holding this unit by hand. We recommend decreasing the zoom magnification and approaching the subject when recording.
- You can record stable pictures without shaking by using a tripod and the remote control.

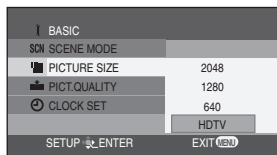
### ■ Number of pixels and picture quality for still picture recording



#### PICTURE SIZE

Changing the recording size

1



Press the menu button, use the cursor button to select [ BASIC ] → [ PICTURE SIZE ], then set the desired size. (P26)

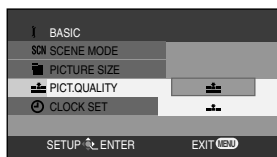
- 2048: 2048×1512 pixels
- 1280: 1280×960 pixels
- 640: 640×480 pixels
- HDTV: 1920×1080 pixels  
(still pictures recorded at 16:9 aspect ratio)



#### PICT. QUALITY

Selecting the picture quality

1



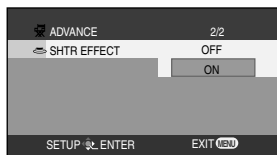
Press the menu button, use the cursor button to select [ BASIC ] → [ PICT. QUALITY ], then set the desired picture quality. (P26)

- : Still pictures with a high picture quality are recorded.
- : Priority is given to the number of still pictures recorded. Still pictures are recorded in normal picture quality.

- When you purchase this unit, [PICTURE SIZE] is set to [HDTV]. The sides of pictures recorded when [HDTV] is set may be cut at printing. Check before printing. When using the printer with a trimming feature or other feature which cuts out both edges of the pictures, cancel the feature for printing. (Refer to the operating instructions of the printer for details.)

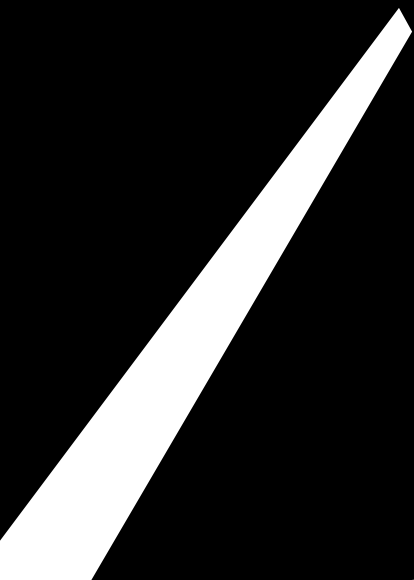
### Recording with a shutter operation effect

You can add a shutter operation simulating sound.



Press the menu button, then use the cursor button to select [ ADVANCE ] → [ SHTR EFFECT ] → [ON]. (P26)



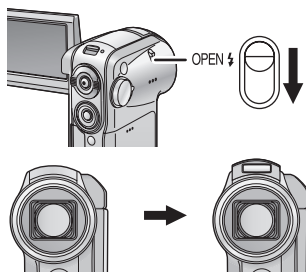


## Built-in flash

Use the built-in flash in order to record still pictures in dark places.

### ◆ Rotate the mode dial to select .

1

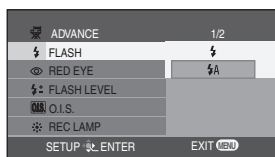



### Slide the [OPEN $\beta$ ] flash lever.

The flash rises.

- The flash will flash when the record button is pressed.

## Setting the flash mode



Press the menu button, then use the cursor button to select [  ADVANCE ]  $\rightarrow$  [  $\beta$  FLASH ] and then select the desired setting. (P26)

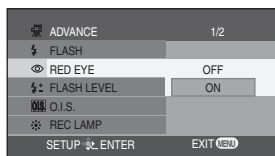
- [  $\beta$  ]: Forced flash
- [  $\beta A$  ]: Auto



- When [  $\beta A$  ] is set, the ambient brightness is automatically detected, and only when the flash is judged necessary will it flash.

## When the flash is not used

Close the flash by pressing it with your fingers until it clicks back into place.

## Red eye reduction function

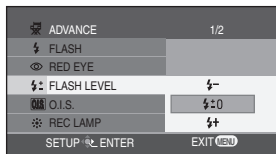


Press the menu button, then use the cursor button to select [  ADVANCE ]  $\rightarrow$  [  RED EYE ]  $\rightarrow$  [ ON ]. (P26)

The [  ] indication appears.

- Red eye phenomenon may appear depending on the recording conditions.

## To adjust the brightness of the flash



Press the menu button, use the cursor button to select

[ ADVANCE] → [ FLASH LEVEL], then set the desired brightness level. (P26)

- [β –]: If the brightness is too high ([β –] or [βA –] indication will appear.)
- [β ± 0]: In normal recording ([β] or [βA] indication will appear.)
- [β +]: If the brightness is insufficient ([β +] or [βA +] indication will appear.)

- Do not accidentally press or cover the flash with your fingers when holding the camera.
- Store the flash when it is not being used.
- The unit, even when its flash has been closed, automatically determines if the flash is necessary by detecting the ambient brightness. (If it determines that the flash is necessary, the [β] indication flashes yellow.)
- When the [β] ([β +]/[β –]) indication or the [βA] ([βA +]/[βA –]) indication is displayed, the flash can be lit. If the indication is flashing or not displayed, the flash cannot be lit.
- The available range of the flash is approx. 1 m to 2 m (3.3 feet to 6.6 feet) in a dark place. Pictures will appear dark or reddish when they are recorded by using the flash at distances greater than 2 m (6.6 feet).
- When setting the flash to [βA] and adjusting the shutter speed or iris/gain at the same time, the indication [βA] etc. may disappear and the flash may not flash.
- Using the flash fixes the shutter speed of 1/750 or faster to 1/500.
- The picture may become out of focus in a dark place. If so, adjust the focus manually. (P45)
- The picture may appear dark if flash is lit in front of a white background.
- Keep the flash stored in locations where using a flash is prohibited.

# Self-timer recording

This is for recording using the timer.

You can record still pictures on an SD card using the timer.

## ◆ Rotate the mode dial to select .

1



**Press the button in the center to display the icon shown in the figure.**

2

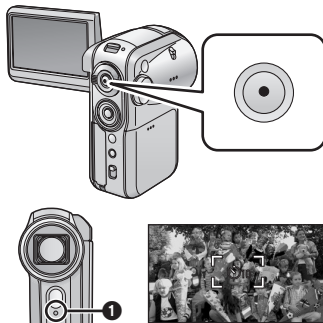


**Press the cursor button left to select the  $[\emptyset]$  self-timer icon.**

The  $[\emptyset_{10}]$  icon flashes orange, then lights white.

- Each time the left cursor button is pressed, the indication changes by one setting in the following order:  $[\emptyset_{10}] \rightarrow [\emptyset_2] \rightarrow$  setting cancelled.
  - $\emptyset_{10}$  : Starts recording after 10 seconds
  - $\emptyset_2$  : Starts recording after 2 seconds

3



**Press the record button.**

After the indication lamp and the  $[\emptyset_{10}]$  or  $[\emptyset_2]$  indication flash for the time which has been set, recording will start. After recording, the self-timer is cancelled.

- 1** Indication lamp
  - When the record button is pressed halfway and then all the way, the subject will be brought into focus when the record button was pressed halfway.
  - When the record button is pressed all the way at once, the subject will be focused just before the recording.

## To stop the timer midway through

Press the [MENU] button. (The self-timer setting is cancelled.)

- By operating the [ON/OFF] switch or mode dial, the self-timer standby mode is canceled.
- Depending on the time taken to bring the subject into focus, the recording may take longer than set to start.
- Setting the self-timer to  $[\emptyset_2]$  is a good way to prevent image shake when the record button is pressed while using a tripod etc.



### Slow-motion playback

The motion pictures will be played back at a speed approx. 1/5 the normal speed.



- 1) Press the cursor button up during motion picture playback to pause the playback.
- 2) Keep pressing the cursor button right. (Slow-motion pictures will be played back in reverse when you keep pressing the cursor button left.)
  - Normal playback is restored when the cursor button up is pressed.
  - The sound is muted during slow-motion playback.

### Frame-by-frame playback

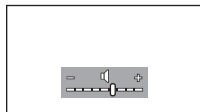
The motion picture is advanced one frame at a time.



- 1) Press the cursor button up during motion picture playback to pause the playback.
- 2) Press the cursor button right. (The frames will be advanced one at a time in the reverse direction when you press the cursor button left.)
  - Normal playback is restored when the cursor button up is pressed.

### To adjust volume

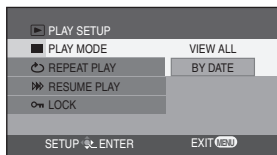
Adjusting the speaker volume, or the headphone volume when using headphones (optional), during playback.



**Move the volume lever to change the volume level.**

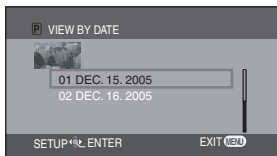
- Towards [+]: increases the volume
- Towards [-]: decreases the volume
- The further the [ ] indication moves to the right (towards the “+” end), the higher the volume level becomes.
- When the adjustment is completed, the volume indication will disappear.

## Playing back motion pictures by date



- 1) Press the menu button, then use the cursor button to select [ ] **PLAY SETUP** → [ ] **PLAY MODE** → [ **BY DATE** ]. (P26)

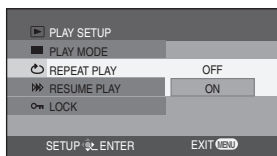
- When [PLAY MODE] is set to [VIEW ALL], all recorded motion pictures will be played back in succession. ([ ] ALL) is displayed.)



- 2) Press the cursor button up or down to select the date for playback, then press the button in the center.

- Once the playback of one motion picture is started, any other motion pictures recorded on the same day will then be played back in succession. ([ ] 01) etc. is displayed.)

## Repeat playback



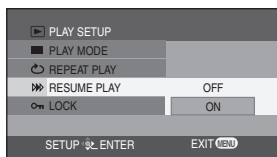
- Press the menu button, then use the cursor button to select

[ ] **PLAY SETUP** → [ ] **REPEAT PLAY** → [ **ON** ]. (P26)

The [ ] indication appears on the thumbnail and full screen views.

- In order to cancel the repeat playback mode, set [REPEAT PLAY] to [OFF].

## Resuming the previous playback



- Press the menu button, then use the cursor button to select

[ ] **PLAY SETUP** → [ ] **RESUME PLAY** → [ **ON** ]. (P26)

- If playback of a motion picture is stopped, [R] appears on the thumbnail view of the stopped scene.

- If playback is stopped at any point during a motion picture while [RESUME PLAY] is set to [OFF], the next time the motion picture is played back, it will be from the beginning.
- [RESUME PLAY] is set to [OFF] if an SD card with the write protection switch at the [LOCK] position is inserted. (P15)

## ■ About motion picture mode compatibility

- This unit can play back MPEG2 formatted files.
- This unit is based on the SD-Video standard.
- This unit may degrade or not play back motion pictures recorded or created on another product and another product may degrade or not play back motion pictures recorded on this unit.
- Motion pictures less than approximately 2 seconds cannot be played back.
- The thumbnails of motion pictures that cannot be played back are displayed in shades of blue and white. (P101)

1

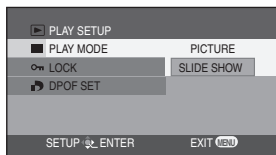


2





## Playing back still pictures as a slide show



Press the menu button, then use the cursor button to select

[ PLAY SETUP] → [ PLAY MODE] → [SLIDE SHOW]. (P26)

- Still pictures will not be played as a slide show when [PICTURE] is selected.

---

### ■ About still picture compatibility

- This unit is compliant with the unified standard DCF (Design rule for Camera File system) established by JEITA (Japan Electronics and Information Technology Industries Association).
  - The file format supported by this unit is JPEG. (Not all JPEG formatted files will be played back.)
  - If an out-of-specs still picture is played back, the folder/file name may not be displayed.
  - This unit may degrade or not play back still picture recorded or created on another product and another product may degrade or not play back data recorded on this unit.
- 
- Do not operate the mode dial during the slide show.
  - When the access lamp is lit, do not insert or remove an SD card.
  - It takes time to display the still picture depending on the number of pixels of the still picture.
  - If you attempt to play back still pictures recorded in a different format or still picture data is defective, the whole display becomes grayish and the "UNPLAYABLE CARD." indication may appear as warning.
  - When playing back a still picture recorded on other equipment, the date and time display is different from when it was recorded.
  - When playing back a still picture recorded on other equipment, its size and that of this unit may appear differently. (P93)

# Deleting scenes

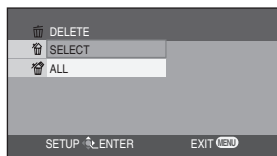
This is for deleting scenes recorded on SD cards.

The deleted scenes cannot be restored.

## ■ Deleting multiple files from the thumbnail display.

◇ Rotate the mode dial to select or .

1

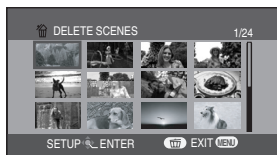


Press the menu button, then use the cursor button to select [DELETE] → [SELECT] or [ALL]. (P26)

When [SELECT] is selected, the motion picture or still picture scenes will be displayed as thumbnails.

- When [ALL] is selected, proceed to step 4.

2



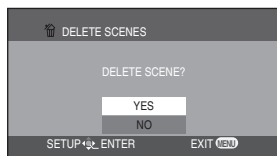
(Only when [SELECT] is selected in step 1)

**Use the cursor button to select the scene to be deleted, then press the button in the center.**

The selected scene will be encircled by a yellow frame.

- When the button in the center is pressed again, the selected scene will be canceled.
- Up to 12 scenes displayed on a page can be set in succession.

3

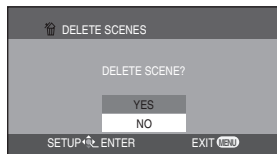


(Only when [SELECT] is selected in step 1)

**Press the button.**

- If no file is selected in step 2 and the button is pressed, the scene encircled by a red frame is deleted.

4



**When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.**

- To stop deleting, select [NO].

## ■ Deleting scenes one at a time

◇ Rotate the mode dial to select  or .

1



Press the [] button during playback.

2



When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

- To stop deleting, select [NO].

## ■ Deleting still picture files recorded on an SD card by other equipment

A still picture file (other than JPEG) that cannot be played back on this unit may be erased.

- Do not open the card slot cover while deleting. The deletion will stop.
- Scenes displayed as thumbnails in shades of blue and white cannot be deleted. (P101)
- Scenes that are locked cannot be deleted.
- If the write protection switch on an SD card is set to [LOCK], the scenes on the card cannot be deleted. (P15)
- When "CARD FULL." is shown during recording, delete unnecessary scenes. If there are no scenes to be deleted, it means that the memory is full so insert a new SD card.
- In case of [ALL], the deletion may take time if there are many scenes on the SD card.
- Do not turn off this unit while deleting.
- When you delete scenes, use a battery with sufficient battery power or use the AC adaptor.
- If scenes conforming to DCF standard are deleted, all the data related to the scenes will be deleted.

card will

, then use the

ect

→  
[S]. (P26)

---

Press the cursor button up, down, left or right to select the scene to be locked, then press the button in the center.

[On] indication appears and the selected scene is locked.

- Press the button in the center again to release the lock setting.

---

## Settings

tion.

Scenes displayed as thumbnails in shades of blue and white cannot be locked. (P101)

If the write protection switch on an SD card is set to [LOCK], the scenes on the card cannot be locked. (P15)

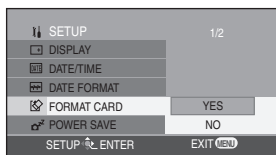
# Formatting an SD card



This is for initializing (formatting) cards.

**Please be aware that if an SD card is formatted, then all the data recorded on the card will be erased. Store important data on a PC, etc.** When saving scenes recorded using this unit to a PC, you must use MotionSD STUDIO. (P73)

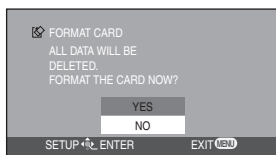
◇ Rotate the mode dial to select , ,  or .

1



Press the menu button, then use the cursor button to select  
[  SETUP ] → [  FORMAT CARD ] →  
[ YES ]. (P26)

2



When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

- To cancel formatting, select [NO].

- Use this unit to format SD cards. If an SD card is formatted on other equipment (such as a PC), the time spent for recording may become longer and you may not be able to use the SD card.
- During formatting, do not turn this unit off.
- When you format the SD card, use a battery with sufficient battery power or the AC adaptor.
- Depending on the type of SD card being used, it may take time to format.
- Do not remove the SD card while formatting.
- If the write protection switch on an SD card is set to [LOCK], it cannot be formatted. (P15)

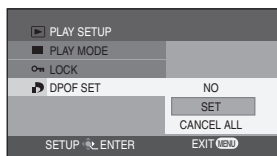
# DPOF setting

This is for writing the printing data on an SD card.

You can write the data of pictures to be printed, number of copies, and other information (DPOF data) onto the SD card.

## ◆ Rotate the mode dial to select .

1



Press the menu button, then use the cursor button to select  
[  PLAY SETUP ] → [  DPOF SET ] →  
[ SET ]. (P26)

2



Press the cursor button up, down, left or right to select a scene to be set, then press the button in the center.

The number of prints set to be in DPOF is displayed.

3



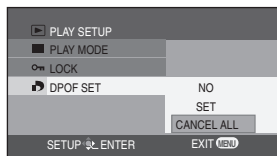
Press the cursor button up or down to select the number of prints, then press the button in the center.



- You can select from 0 to 999. (Selected number of pictures can be printed as you set the number of prints with the printer supporting DPOF.)
- The function can be cancelled by setting the number of pictures to [0].

## To complete the settings

Press the [MENU] button.

## To return the total number of pictures to [0]



Press the menu button, then use the cursor button to select  
[  PLAY SETUP ] → [  DPOF SET ] →  
[ CANCEL ALL ]. (P26)

- When the confirmation message appears, use the cursor button to select [YES], then press the button in the center.

## ■ What is DPOF?

DPOF stands for Digital Print Order Format. This enables picture printing information to be written onto an SD card so that it can be used on a system supporting DPOF.

- The DPOF setting can be established for up to 999 scenes.
- DPOF setting made on another camera may not be recognized by this unit. Please perform the DPOF settings on this unit.
- You cannot add the recording date to pictures to be printed with the DPOF settings.
- If the write protection switch on an SD card is set to [LOCK], the DPOF setting cannot be set. (P15)

## PictBridge

This is for printing pictures by directly connecting to the printer.

To print pictures by directly connecting this unit to the printer, use a printer compatible with PictBridge. (Read the operating instructions for the printer.)

◆ **Connect this unit to the AC adaptor.**

◆ **Rotate the mode dial to select .**

1

Open the terminal cover, then firmly plug one end of the USB cable ① (supplied) into the unit's USB terminal and the other end into the terminal on the printer.

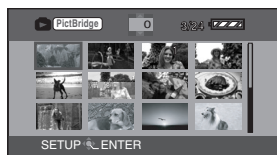
Insert the plugs as far as they will go.

The images recorded on the SD card are displayed as thumbnails.

- When no SD card is inserted in this unit, the [ ] indication does not appear. (You cannot print any pictures.)
- When this unit and the printer are not connected properly, the [ ] indication keeps blinking. (It will blink for over approx. 1 minute.) Connect the cable or check the printer.
- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)

## PictBridge (continued)

2



Press the cursor button up, down, left or right to select a scene to be printed, then press the button in the center.

The number of pictures set is displayed.

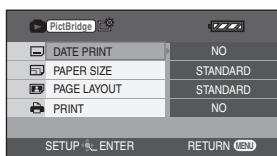
3



Press the cursor button up or down to select the desired number of prints, then press the button in the center.

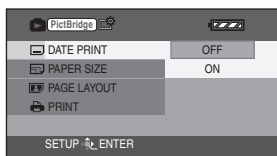
- You can set up to 9 prints.
- The function can be canceled by setting the number of pictures to [0].
- Up to 12 scenes displayed on a page can be set in succession by repeating steps 2 and 3.

4



Press the menu button to display the menus screen.

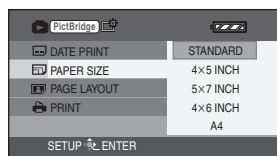
5



Use the cursor button to select [DATE PRINT], then press the cursor button right to enter the date print setting.

- If the printer is not capable of date printing, this setting is unavailable.

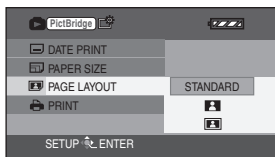
6



Use the cursor button to select [PAPER SIZE], then press the cursor button right to enter the paper size setting.

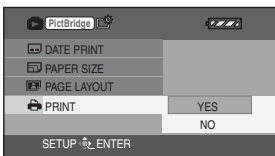
- **STANDARD:** Size specific to the printer
- **4×5 INCH:** L size
- **5×7 INCH:** 2L size
- **4×6 INCH:** Postcard size
- **A4:** A4 size
- You cannot set paper sizes not supported on the printer.





Use the cursor button to select [ PAGE LAYOUT ], then press the cursor button right to enter the layout setting.

- **STANDARD:** Layout specific to the printer
- : No frame print
- : Frame print
- You cannot set page layouts not supported on the printer.



Use the cursor button to select [ PRINT ], then press the cursor button right to select [YES]. The pictures are printed.

- Exit PictBridge by disconnecting the USB cable (supplied) after the pictures have been printed.

## When you stop printing halfway

Press the cursor button down.

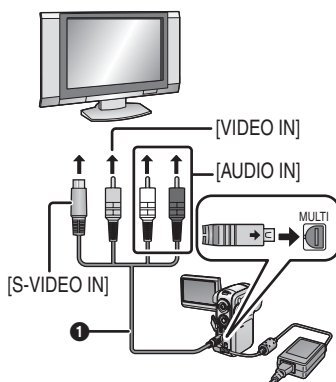
- A confirmation message appears. If [YES] is selected, the settings are cancelled and the screen returns to the thumbnails. If [NO] is selected, the settings made in steps 5 to 7 are kept and the screen returns to the thumbnails.
- 
- Avoid the following operations during printing. These operations disable proper printing.
    - Disconnecting the USB cable
    - Removing the SD card
    - Switching the mode dial
    - Turning off the power
  - Check the settings for the paper size, quality of print, etc. on the printer.
  - You cannot print pictures that cannot be played on this unit.
  - When the unit is connected directly to the printer, the DPOF settings cannot be used.

# Playback on TV

Images recorded by this unit can be played back on a TV.

## ◆ Insert an SD card with recordings into the unit.

1



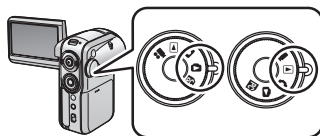
**Open the terminal cover and then connect the multi cable (supplied) to the multi-connector terminal [MULTI] and the TV.**

### ❶ Multi cable (supplied)

Insert the plugs as far as they will go.

- If the TV has an S-Video terminal, then also connect an S-Video plug. It allows you to enjoy more beautiful images. (You must also connect the Video/Audio input terminals.)
- Use the AC adaptor to free you from worrying about the battery running down.

2



**Turn on this unit, then set the mode to [▶] or [▶].**

## 3 Change the input channel on the TV.

<TV setting>

Example: Set the channel to "VCR2" etc. (The channel set will differ depending on the terminal to which the cable is connected.)

## 4 Start playback on this unit. (P57, 60)

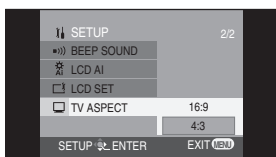
The image and audio are output on the TV.



### ■ If the image or audio from this unit is not output on the TV

- Check that the plugs are inserted as far as they go.
- Check the connected terminal.
- You cannot playback motion pictures recorded to SD card on this unit by inserting the SD card into a TV with a built-in SD card slot.
- **Check the TV's input setting (input switch).** (For more information, please read the operating instructions for the TV.)






## Connecting to a TV with a 4:3 TV aspect ratio

When motion pictures recorded with a 16:9 aspect ratio (the motion picture recording menu's [WIDE] setting is [ON]) or still pictures recorded with the same aspect ratio (the still picture recording menu's [PICTURE SIZE] setting is [HDTV]) are played back on a TV with a 4:3 aspect ratio, the images shown on the LCD monitor may be elongated vertically. In this case, you can play them back with their original aspect ratio by changing the menu setting. (Depending on the settings of the TV, the images may not be shown correctly. Refer to the operating instructions of the TV.)



**Press the menu button, then use the cursor button to select**  
**[  SETUP ] → [  TV ASPECT ] → [ 4:3 ].**  
**(P26)**

**Examples showing images with a 16:9 aspect ratio displayed on the TV screen**

		Aspect ratio of TV screen		
		4:3	16:9	
[  TV ASPECT ]	16:9	① 	③ 	① The images are elongated vertically. ② Black bands appear at the top and bottom of the screen. ③ The regular images are displayed. ④ Black bands appear at the top, bottom, left and right of the screen.
	4:3	② 	④ 	

### ■ When watching the recorded motion pictures on TV

Depending on the TV connected, the sides of the images (the part outside the dotted line) being played may not appear. We recommend widening the recording range of the objects you want to record beforehand.

- ① 16:9 screen
- ② 4:3 screen



### To display the on-screen information on the TV

The information displayed on the LCD monitor (operation icon and mode indication, etc.), date and time (P28) can be displayed on the TV.



**Press the [OSD] button on the remote control.**

- Press the button again to erase the OSD information.
- The LCD monitor display does not change.

## Using this unit's recorded data on other devices

This is for copying recordings from a DVD recorder onto its hard disk.

To prevent accidental deleting of images, copy the files on the SD card to the DVD recorder.

Depending on the type of format, the recorded pictures (MPEG2) may be deleted.

- For further information, see the user manual.

2



- The images recorded in the SD card may be deleted or overwritten depending on the recording format. Once the images are recorded, they cannot be deleted or copy them onto an SD card.

# With a PC

When the CD-ROM (supplied) is inserted into the PC, the CD launcher starts.



## Video editing software MotionSD STUDIO 1.0E

This software allows pictures to be acquired from this unit, edited and output.

You can also send a picture acquired from this unit by e-mail, and edited pictures can be written to the DVD drive.

For information about how to use MotionSD STUDIO 1.0E, read the PDF operating instructions.

## Web Camera Driver

When the unit is connected to a PC, you can send pictures and audio from the unit over the Internet to the person you are communicating with. Alternatively, you can use the PC's speakers to configure a kind of Internet TV phone for communicating.

## Acrobat Reader

To view the installed operating instructions of MotionSD STUDIO, Adobe Acrobat Reader 5.0 or later is required.

If Adobe Acrobat Reader is not installed in the PC used, click the desired language in the setup screen (or open a folder of which name is the name of the desired language in [Adobe] folder and then double-click [AR505XXX.exe] or [AR500XXX.exe] file. "XXX" (the last 3 characters in the name of the file) varies depending on the language folder you selected) and follow the message on the screen to install Adobe Acrobat Reader.

## DirectX

You will need Microsoft DirectX 9.0b in order to use MotionSD STUDIO or the Web camera functions. (It can also be installed when you install the MotionSD STUDIO or Web camera driver.) If DirectX is not installed on your PC because you cancelled its installation when installing the software, click [DirectX] in the CD launcher, and follow the on-screen messages to install it.

- Depending on the operating environment, software applications supporting the old version of DirectX may not run properly after DirectX 9.0b has been installed. If this happens, contact the manufacturer of these applications.  
(Your PC must support DirectX 9.0)

## With a PC (continued)

- Even if the system requirements mentioned in these operating instructions are fulfilled, some personal computers cannot be used.
- This software is not Macintosh compatible.
- This software is not compatible with Microsoft Windows 3.1, Windows 95, Windows 98, Windows Me and Windows NT.
- Operation is not guaranteed on an upgraded OS.
- Operation on an OS other than the one pre-installed is not guaranteed.
- When 2 or more USB devices are connected to a PC, or when devices are connected through USB hubs or by using extension cables, proper operation is not guaranteed.
- Use the supplied USB cable when connecting to the PC. (Operation is not guaranteed with any other USB cables.)
  - IBM and PC/AT are registered trademarks of International Business Machines Corporation of the U.S.
  - Intel®, Pentium® and Celeron® are registered trademarks or trademarks of Intel Corporation in the United States and other countries.
- To upgrade the Windows Service Pack (SP1, SP4 etc.), select [start] (→[All Programs (Programs)])→[Windows Update]. (Internet connection is required for this.)

## Operating environment for MotionSD STUDIO 1.0E (Video Editing Software)

<b>Personal computer</b>	IBM PC/AT compatible personal computer
<b>OS</b>	Microsoft Windows 2000 Professional SP4/Microsoft Windows XP Home Edition SP2/Microsoft Windows XP Professional SP2
<b>CPU</b>	Intel Pentium III 800 MHz or higher (including compatible CPU) (Intel Pentium 4 1.6 GHz or higher recommended)
<b>RAM</b>	256 MB or more (512 MB or more recommended)
<b>Display</b>	High Color (16 bit) or more (32 bit recommended) Desktop resolution of 1024×768 pixels or more (1280×1024 pixels or more recommended) Graphics card complying with DirectX 9.0b or 9.0c, and DirectDraw overlay
<b>Free hard disk space</b>	Ultra DMA—33 or more (100 or more is recommended) 640 MB or more When writing to DVD, the same amount of free space as the disc is necessary.
<b>Necessary software</b>	DirectX 9.0b or 9.0c (If you install the software in a personal computer that is not compatible with DirectX 9.0b or 9.0c, the personal computer may stop operating properly. If you are unsure if your personal computer is compatible, contact the maker.) Windows Media Player 6.4 to 10
<b>Sound</b>	DirectSound Support
<b>Drive</b>	CD-ROM drive—required to install this program (When writing to DVD, a compatible drive and media are necessary.)
<b>Interface</b>	USB port (USB 2.0 High Speed recommended)
<b>Other requirements</b>	Mouse or equivalent pointing device

### MotionSD STUDIO

- This software is not compatible with a multi-boot environment.
- This software is not compatible with a multi-CPU environment.
- Operation is not guaranteed on Microsoft Windows XP Media Center Edition, Tablet PC Edition and not compatible with 64-bit computers.

**Operating environment for using the unit as a Web camera**

<b>Personal computer</b>	IBM PC/AT compatible personal computer
<b>OS</b>	Microsoft Windows 2000 Professional SP4/Microsoft Windows XP Home Edition SP1 or SP2/Microsoft Windows XP Professional SP1 or SP2 (The standard driver of OS is used after Windows XP SP2.)
<b>CPU</b>	Intel Pentium III 450 MHz or higher or Intel Celeron 400 MHz or higher
<b>RAM</b>	128 MB or more (256 MB or more recommended)
<b>Display</b>	High Color (16 bit) or more Desktop resolution of 800×600 pixels or more
<b>Free hard disk space</b>	250 MB or more
<b>Necessary software</b>	DirectX 9.0b or 9.0c Windows Messenger 5.0 or 5.1/MSN Messenger 7.0
<b>Drive</b>	CD-ROM drive
<b>Interface</b>	USB port
<b>Other requirements</b>	Mouse or equivalent pointing device

**To use this unit as a Web Camera, the following conditions must be met.**

- For information about how to use Windows Messenger/MSN Messenger, read the help file.
- The other parties also need to use the same software during the communication.
- Depending on the PC's security settings, proper communication may not be possible.



# Installing MotionSD STUDIO

- Before attempting to start up the CD launcher, close all other software applications which are running.
- Do not perform any other operations on your PC while MotionSD STUDIO is being installed.

1



## Insert the CD-ROM into the PC.

The CD launcher starts.

(Refer to page 79 if the CD launcher fails to start automatically after the CD-ROM has been inserted into the PC.)

2



## Click [MotionSD STUDIO 1.0E].

- The software application may not run properly if you cancel the installation at any point e.g. by pressing [Cancel].

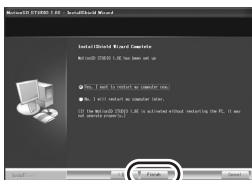
3



## Click [Next].

- Continue to follow the on-screen messages to install it.

4



## Click [Finish].

- After the application has been installed, the PC will reboot automatically.
- Depending on the operating environment, you may be required to install DirectX 9.0b. If so, click [Yes], and install it.

- If you install the software in a PC that is not compatible with DirectX 9.0b or 9.0c, the PC may stop operating properly. If you are unsure whether or not your PC is compatible, contact the maker.
- If you are unsure whether or not your PC is compatible, contact the maker of your PC.

# Installing the Web Camera Driver

- Before attempting to start up the CD launcher, close all other software applications which are running.
- Install the driver if you are using Windows XP SP1 or Windows 2000 SP4. (With Windows XP SP2, the driver does not need to be installed because the Web camera is run using the operating system's standard driver.)
- If you are using Windows XP, installation may take some time depending on the environment.

**Before proceeding with the installation, do not connect the USB cable. If you connect the USB cable, you will not be able to install the Web camera driver properly.**

1



## Insert the CD-ROM into the PC.

The CD launcher starts.

(Refer to page 79 if the CD launcher fails to start automatically after the CD-ROM has been inserted into the PC.)

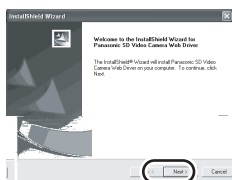
2



## Click [Web Camera Driver].

- The software application may not run properly if you cancel the installation at any point e.g. by pressing [Cancel].

3



## Click [Next].

4

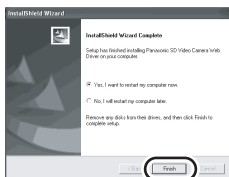


Read carefully through the terms and conditions shown on the screen for the [License Agreement], then click [Yes].

- You cannot install the application if you click [No].
- After the application has been installed, the PC will reboot automatically.
- Depending on the operating environment, you may be required to install DirectX 9.0b. If so, click [Yes], and install it.

- After the PC has rebooted, the installation of the Web camera driver starts from step 3.

5



Click [Finish].

The PC must be rebooted for the driver to work.

■ If the CD launcher fails to start automatically after the CD-ROM has been inserted into the PC

Select [start] → [My Computer] (or double-click [My Computer] on the desktop), and double-click [PANASONIC]. (The CD launcher can also be started up by opening [PANASONIC] and double-clicking [autorun (.exe)]).

# Connection and recognition procedures

After the driver and software applications are installed, the unit must be connected to the PC and be correctly recognized by the PC.

- Connect after installing the driver and software applications.  
If you connect this unit to a PC before installation, this unit may not be properly recognized.
- If a CD-ROM is inserted in the PC, remove it. (If the CD launcher is running, wait until it finishes, then remove the CD-ROM.)
- If the recognition procedure is not accomplished properly, operation will not be possible after connecting the unit to the PC.
- If the unit fails to operate normally, it may mean that you have not conducted the installation or recognition procedure properly.
- Use AC adaptors as the power supply for the unit and the equipment connected to it.

## ◆ Connect this unit to the AC adaptor.

1

Select this unit's operation mode.



- When this unit is in still picture playback mode, connect it to a printer supporting PictBridge. (P67)

2

**Open this unit's terminal cover, then firmly plug one end of the USB cable ① (supplied) into the USB terminal and the other end into the terminal on the PC.**

- Insert the plugs as far as they will go. The unit and PC will not operate properly if they are not inserted fully.
- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)
- **When the unit is set to PC Connection mode and connected to a PC, the operation mode cannot be changed and its power cannot be turned off.**  
In this case, unplug the USB cable (P84), change the operation mode and then turn off its power.

## When this unit is in motion picture recording mode or still picture recording mode, verify the driver. (P86)

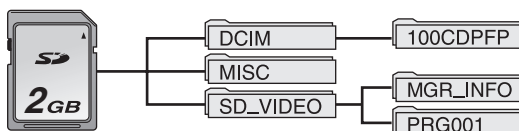
- If you are running Windows 2000, the message shown on the right may appear the first time you connect this unit to the PC (the first time you use motion picture recording mode or motion picture playback mode). This has no affect on operation so click [Yes].
  - [Panasonic SD Video Camera Web Camera Device] is displayed.
  - The recognition procedure is completed automatically, and there may be no need to conduct any further steps. (You may proceed straight away to using this unit and PC.)



## In PC Connection mode

[Removable disk] is displayed on [My Computer].

### ■ Folder structure of a removable disk

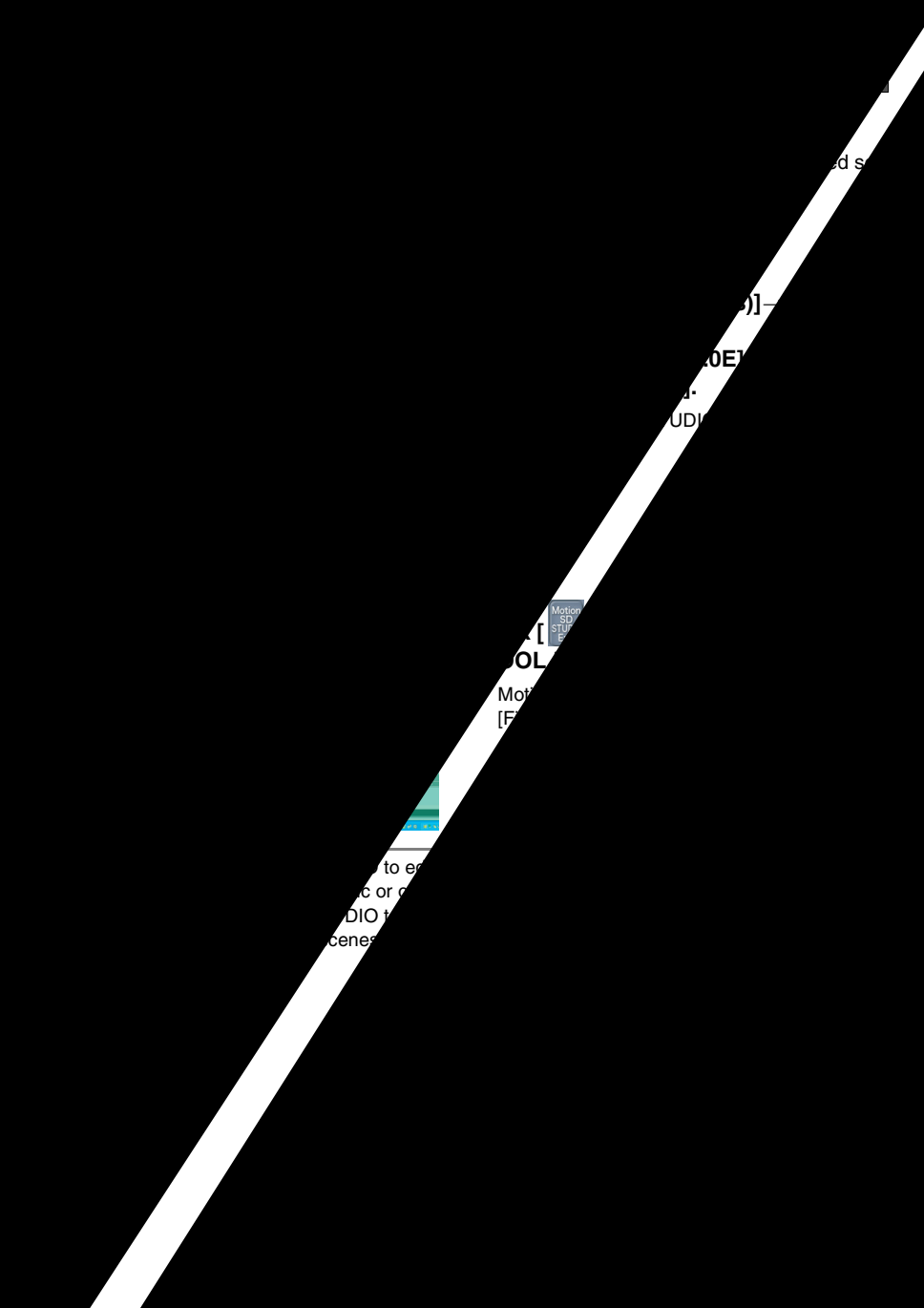


- The scenes recorded by this unit are stored in the following folders.

	Folder (example)	Scene (example)
Motion pictures	PRG001	MOV001.MOD
Still pictures	100CDPFP	IMGA0001.JPG

- Do not use the PC to delete the SD card's folders. Otherwise, it may no longer be possible for this unit to read the SD card.
- Always use this unit to format SD cards.
- When data not supported by this unit has been recorded on a PC, it will not be recognized by this unit.
- Up to 999 scenes can be recorded in the [100CDPFP] or other such folder.
- Up to 99 scenes can be recorded in the [PRG001] or other such folder.
- The DPOF setting scenes are recorded in the [MISC] folder.

**Do not acquire the files recorded on this unit by Internet Explorer etc.  
Use MotionSD STUDIO to acquire them. (P82)**



# Reading the MotionSD STUDIO operating instructions

For details on how to use MotionSD STUDIO, read the PDF instructions or the help files.

1



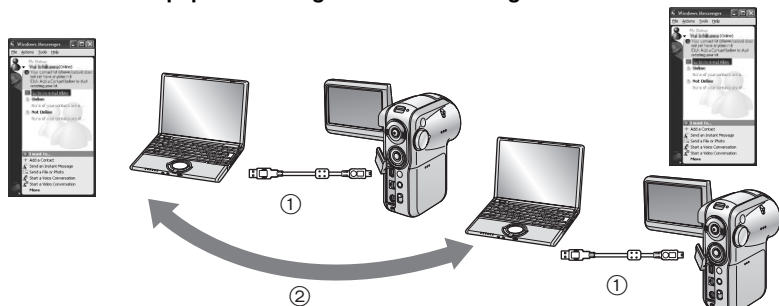
Select [start]→  
[All Programs (Programs)]→  
[Panasonic]→  
[MotionSD STUDIO 1.0E]→  
[Manual (PDF format)].

- After starting the software, on the menu select [Help]→[Help] to display the help files.
- You will need Adobe Acrobat Reader 5.0 or later to read the PDF operating instructions. (P73)

## Using the unit as a Web Camera

When the unit is connected to a PC, you can send pictures and audio from the unit over the Internet to the person you are communicating with. Alternatively, you can use the PC's speakers to configure a kind of Internet TV phone for communicating.

<Outline view of equipment configuration when using the unit as a Web camera>



- ① Unit used as a Web Camera
- ② Computers connected via the Internet

- You must use AC adaptors as the power supply for all the equipment.
- You can use the PC's microphone instead of the unit's microphone. (Set it using PC.)
- Depending on the communication environment and the performance of the PC, the pictures and/or audio may break up during communication.

## Using the unit as a Web Camera (continued)

### ■ Software that can be used when using the unit as a Web Camera

(○: Available, —: Not available)

			②		
			Windows XP		Windows 2000
			Windows Messenger	MSN Messenger	MSN Messenger
①	Windows XP	Windows Messenger	○	—	—
		MSN Messenger	—	○	○
	Windows 2000	MSN Messenger	—	○	○

Refer to page 76 for information about the operating environment.

① Your own PC

② Other person's PC

### ■ Connections

Before connecting the unit to the PC, you must install [Web Camera Driver]. (P78)

**1) Turn on the unit's power, then set it to motion picture recording mode or still picture recording mode.**

**2) Connect the unit to the PC via the USB cable. (P80)**

- Do not use any other USB cables except the supplied one. (Operation is not guaranteed with any other USB cables.)

**3) Select [start] → [All Programs (Programs)] → [Windows Messenger] or [MSN Messenger].**

## To disconnect USB cable safely

**1) Double click the  icon in task tray.**

Hardware disconnect dialogue appears.

- Depending on your PC's settings, this icon may not be displayed.

**2) Select [USB Mass Storage Device] and click [Stop].**

**3) Verify [MATSHITA SD Video Camera USB Device] is selected and click [OK].**

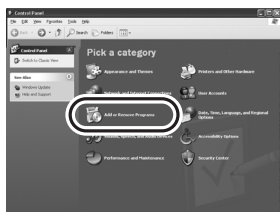
- Click [OK], and you can safely disconnect the cable.



# Software application uninstallation

Follow the steps below to uninstall any software applications that you no longer require.

1



Click [start] → ([Settings] →) [Add or Remove Programs (Applications)] in [Control Panel].

2



Click here. Select the software application to be deleted, then click [Change/Remove] ([Change or Remove] or [Add/Remove]).

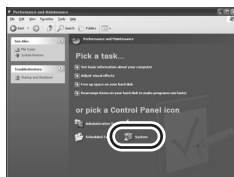
- Proceed with the uninstallation by following the on-screen instructions.
- Select [Panasonic SD Video Camera Web Driver] to uninstall the Web camera driver.
- To remove the Web camera driver from the PC's device manager, verify the driver by referring to "Verifying the driver" (P86), then delete the driver manually.

# Verifying the driver

If the driver does not work properly, follow the steps below to verify if it has been recognized properly. Select the unit's mode, connect the unit to the PC via the USB cable, then verify the driver. (P80)

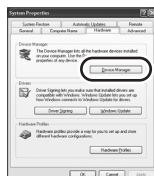
- With some PCs including those made by NEC, the Device Manager may not be displayed if a mode that places restrictions on the functions has been established. Consult the manufacturer or follow the steps in your PC's operating instructions to establish a mode in which all the functions can be used, then proceed with operation.

1



Select [start]→([Settings]→  
[Control Panel]→([Performance and  
Maintenance]→) [System].

2



Display [Device Manager], and check  
whether the driver has been installed  
properly.

- Click the [Hardware] tab, then click [Device Manager].

■ If the driver has been recognized properly  
(When the unit is in the motion picture recording or still picture recording mode)  
Windows XP:

[USB compound device] is displayed at [USB controller] and [USB video device] at [Imaging device].

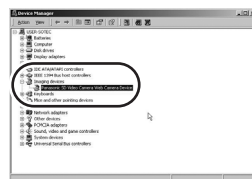
- If two, three or more SD video cameras are connected, [USB video device #X (X: number)] may appear.

Windows 2000:

[Panasonic SD Video Camera Web Camera Device] appears at [Imaging device].

(When the unit is in PC Connection mode)

[USB Mass Storage Device] appears at [USB (Universal Serial Bus) controller].



## ■ If the driver has not been recognized properly

[!] or [Unknown device] appears at [USB (Universal Serial Bus) controller] or [Other devices], etc.

(Where the display will appear depends on the type of PC you are using.)

Disconnect the USB cable, uninstall then re-install the [Web Camera Driver] (P78) and connect the USB cable again.

In the following cases, the Web camera driver has not been installed properly.



- When an exclamation [!] mark appears at [USB compound device] under [USB (Universal Serial Bus) controller] or at [USB video device] under [Imaging device]
- When [Web Camera] is displayed at [Other devices]



Remove the driver from Device Manager, uninstall it (P85), re-install [Web Camera Driver] (P78), then conduct the connection procedure once more.



# Approximate Number of Recordable Pictures on an SD Card



## Number of recordable pictures



### ■ Picture quality and number of recordable pictures (using SD Memory Cards)

Picture size	[2048] (2048×1512)	
Picture quality		
8 MB	2	4
16 MB	7	12
32 MB	18	28
64 MB	38	61
128 MB	75	120
256 MB	155	250
512 MB	310	490
1 GB	630	990
2 GB	1280	2010

[1280] (1280×960)	
	
7	12
20	32
45	73
96	155
185	300
390	620
770	1230
1550	2470
3160	5030

Picture size	[640] (640×480)	
Picture quality		
8 MB	37	75
16 MB	92	185
32 MB	200	410
64 MB	430	850
128 MB	820	1640
256 MB	1710	3410
512 MB	3390	6780
1 GB	6790	13580
2 GB	13820	27640

[HDTV] (1920×1080)	
	
3	6
10	16
23	37
50	80
98	155
210	320
410	640
820	1290
1670	2630

- The number of recordable pictures depends on whether [] and [] are used together and on the subject being recorded.
- The numbers shown in the table are approximations.

# Menu list

## Motion picture recording menus

### ■ [ BASIC ]

BASIC	
SCN SCENE MODE	OFF
WIND CUT	ON
REC MODE	SP
WIDE	ON
CLOCK SET	NO
SETUP ENTER	EXIT MENU

[ SCN SCENE MODE ] (P43)

[ WIND CUT ] (P40)

[ REC MODE ] (P34)

[ WIDE ] (P40)

[ CLOCK SET ] (P28)

### ■ [ ADVANCE ]

ADVANCE	
D.ZOOM	25x
O.I.S.	ON
MAGICPIX	OFF
REC LAMP	OFF
ZOOM MIC	OFF
SETUP ENTER	EXIT MENU

[ D.ZOOM ] (P36)

[ O.I.S. ] (P41)

[ MAGICPIX ] (P42)

[ REC LAMP ] (P32)

[ ZOOM MIC ] (P37)

### ■ [ SETUP ]

SETUP 1/3	
DISPLAY	ON
DATE/TIME	D/T
DATE FORMAT	M/D/Y
FORMAT CARD	NO
QUICK START	OFF
SETUP ENTER	EXIT MENU

[ DISPLAY ] (P91)

[ DATE/TIME ] (P29)

[ DATE FORMAT ] (P28)

[ FORMAT CARD ] (P65)

[ QUICK START ] (P18)

[ POWER SAVE ] (P91)

[ BEEP SOUND ] (P91)


[ LCD ALI ] (P30)

[ LCD SET ] (P29)

[ INITIAL SET ] (P91)

[ DEMO ] DEMO MODE ] (P91)

## Still picture recording menu

- For [  SETUP ] items, refer to the motion picture recording menus.

### ■ [ BASIC ]

BASIC	
SCN SCENE MODE	OFF
PICTURE SIZE	HDTV
PICT.QUALITY	1
CLOCK SET	NO
SETUP ENTER	EXIT MENU

[ SCN SCENE MODE ] (P43)

[ PICTURE SIZE ] (P52)

[ PICT.QUALITY ] (P52)

[ CLOCK SET ] (P28)

### ■ [ ADVANCE ]

ADVANCE	
D.ZOOM	25x
O.I.S.	ON
MAGICPIX	OFF
REC LAMP	OFF
ZOOM MIC	OFF
SETUP ENTER	EXIT MENU

[ FLASH ] (P54)

[ RED EYE ] (P54)

[ FLASH LEVEL ] (P55)

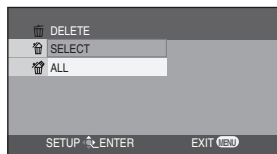
[ O.I.S. ] (P41)

[ REC LAMP ] (P32)

[ SHTR EFFECT ] (P52)

## ▶ Motion picture playback menus

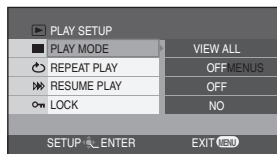
### ■ [ DELETE ]



[ SELECT ] (P62)

[ ALL ] (P62)

### ■ [ PLAY SETUP ]



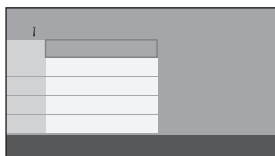
[ PLAY MODE ] (P59)

[ REPEAT PLAY ] (P59)

[ RESUME PLAY ] (P59)

[ LOCK ] (P64)

### ■ [ SETUP ]



[ DISPLAY ] (P91)

[ DATE/TIME ] (P29)

[ DATE FORMAT ] (P28)

[ FORMAT CARD ] (P65)

[ POWER SAVE ] (P91)

[ BEEP SOUND ] (P91)

[ LCD AI ] (P30)

[ LCD SET ] (P29)

[ TV ASPECT ] (P71)

## Still picture playback menus

- For [ DELETE ] and [ SETUP ] items, refer to the motion picture playback menus.

### ■ [ PLAY SETUP ]

[ PLAY MODE ] (P59)

[ LOCK ] (P64)

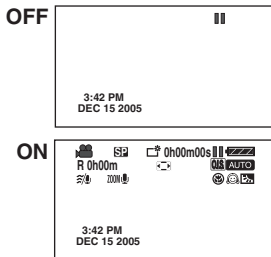
[ DPOF SET ] (P66)

# Setup menu

## ■ [ DISPLAY ]

- OFF
- ON

The screen indications are selected as shown in the illustration below.



## ■ [ BEEP SOUND ]

- OFF
- ON

This allows operations such as starting and ending recording to be signalled by a beep.

When [OFF] is set, no beep is heard when an operation such as recording is started or ended.

### 1 Beep

When you start recording or turn on the power. Also when deleting files, when the confirmation message appears while formatting and when this unit is recognized by the PC or the printer.

### 2 Beeps

When you pause recording or turn off the power.

### 2 Beeps 4 times

If you insert an SD card with the write protection switch set to [LOCK] when a recording mode has been selected. If you select a recording mode when an SD card with the write protection switch set to [LOCK] has been inserted. Check the sentence displayed on the screen. (P94)

## ■ [ POWER SAVE ]

- OFF
- 5 MINUTES

[OFF]: The power saving function is not activated.

### [5 MINUTES]:

When about 5 minutes passed without any operation, this unit automatically turns off to prevent the battery from running down. When you use this unit, turn it on again.

- In the following cases, the power may not turn off even when set [POWER SAVE]→[5 MINUTES].
  - When connecting to the AC outlet (When using the AC adaptor)
  - When connecting the unit to a PC or printer via the USB cable

## ■ [ INITIAL SET ]



- YES
- NO

When there is a menu that cannot be selected depending on a combination of functions, set to [YES] for changing the menu settings back to the initial shipping condition.

## ■ [ DEMO MODE ]

- OFF
- ON

This item is used to start the unit demonstration.

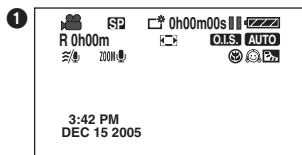
(Only when the mode dial is at the  or  position)

- If you set to [DEMO MODE]→[ON] without inserting an SD card, this unit is automatically set to the demonstration mode for introducing its functions. If any button is pressed or operated, the demonstration mode is canceled. If no operations take place for approx. 10 minutes, the demonstration mode automatically starts. To terminate the demonstration mode, insert an SD card, or set to [DEMO MODE]→[OFF]. For normal use, set this function to [OFF].

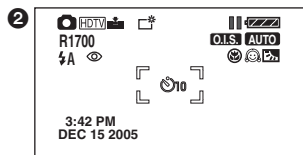
# Indications

## Recording indications

### 1 Motion picture recording



### 2 Still picture recording



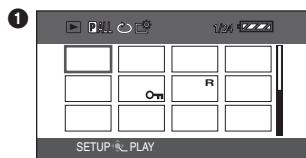
	Remaining battery power
<b>R 0h00m</b>	Remaining time left for recording
<b>0h00m00s</b>	Time code
<b>12:30 PM DEC 15 2005</b>	Date/Time indication
<b>● / II (Red)</b>	Recording
<b>II (Green)</b>	Recording pause
	Digital zoom
<b>AUTO</b>	Auto mode
<b>MNL</b>	Manual mode
<b>MF</b>	Manual focus
<b>2×</b>	Zoom magnification indication
	Back light mode
<b>O.I.S.</b>	Image stabilizer
	Power LCD
<b>1/60</b>	Shutter speed
<b>OPEN/F2.4</b>	F number
<b>6dB</b>	Gain value
<b>WEB</b>	WEB CAMERA mode
	Soft skin mode
	Tele macro
	MagicPix function
<b>ZOOM</b>	Zoom microphone
	Wind noise reduction
<b>XP, SP, LP</b>	Motion picture recording mode

	Sports mode
	Portrait mode
	Low light mode
	Spotlight mode
	Surf & snow mode
<b>AWB</b>	Auto white balance
	Indoor mode (recording under incandescent lamp)
	Outdoor mode
	Manual adjustment mode
<b>β, β-, β+, βA, βA+, βA-</b>	Video flash
	Red eye reduction
<b>○ (White) ● (Green)</b>	Shutter chance mark
<b>0 10, 0 2</b>	Self-Timer recording
<b>MEGA</b>	MEGA OIS
<b>2048 1280 640 HDTV</b>	Number of recording pixels for still pictures 2048×1512 1280×960 640×480 1920×1080
	Still picture quality
<b>R 18</b>	Remaining number of still pictures (Flashes in red when [R 0] appears.)



## Playback indications

### 1 Motion picture playback



	Playback
	Pause
	Cue/Review playback
	Last/first file paused
	Skip playback
	Slow motion playback
	Frame-by-frame playback
<b>0h00m00s</b>	Motion picture playback time
	Select playback
	Volume adjustment
	Slide show playback
<b>100-0001</b>	Still picture folder/Scene number display
<b>No. 10</b>	File number
	When a printer compatible with PictBridge is connected
<b>000</b>	Number of DPOF Setting
<b>1</b>	DPOF already set (to more than 1)
	Lock setting
<b>R</b>	Resume playback
	Repeat playback
	Number of recording pixels for still pictures
	2048×1512
	1280×960
	640×480
	1920×1080

### 2 Still picture playback



	2048 pixels or more
	1600 or more, less than 2048 pixels
	1280 or more, less than 1600 pixels
	1024 or more, less than 1280 pixels
	800 or more, less than 1024 pixels
	640 or more, less than 800 pixels (The size is not displayed at under 640 pixels.)

For pictures not recorded with this unit, the size display is determined as follows according to the number of horizontal pixels. If this number is 2048, 1280 or 640, then , or will be displayed respectively regardless of the number of vertical pixels.

## Confirmatory indications

<b>0 or —</b>	The built-in battery is low. (P29)
	<ul style="list-style-type: none"> <li>The warning/alarm indication appears in face-to-face recording style. Return the direction of the LCD monitor in normal position and check the warning/alarm indication. (P21)</li> <li>The warning/alarm indication appears during Web camera operations. For details of the warning, refer to the Troubleshooting. (P101)</li> </ul>
	No SD card is inserted/ unusable card.

## Confirmatory indications

<b>CANNOT RECORD.</b>	Data writing to the SD card has failed.
<b>CHECK CARD.</b>	This card is not compatible or it cannot be recognized by the unit.
<b>THIS CARD CANNOT RECORD IN VIDEO MODE.</b>	An 8 MB or 16 MB SD card has been inserted in motion picture recording mode.
<b>CARD LOCKED.</b>	The write protection switch on the SD Memory Card is set to [LOCK]. (P15)
<b>SCENE NUMBER IS FULL.</b>	The number of still pictures or motion picture scenes (program) that can be recorded on 1 card is exceeded. Delete unnecessary scenes or insert a new SD card. (P14, 62)
<b>PROGRAM NUMBER IS FULL.</b>	
<b>NO CARD.</b>	No SD card is inserted. (P14)
<b>CARD DOOR OPENED.</b>	The unit is being operated with the card slot open.
<b>CARD FULL.</b>	The SD card is full. No further data can be recorded. Delete motion picture files or insert a new SD card. (P14, 62)
<b>UNPLAYABLE CARD.</b>	The data on the SD card cannot be played back.
<b>FILE LOCKED.</b>	You are attempting to erase protected files. (P15)
<b>NOW ACCESSING. PLEASE DO NOT REMOVE CARD.</b>	Data processing is now underway. Close the card slot and wait a few moments.
<b>NO DATA.</b>	There are not any still pictures and motion pictures recorded on the SD card.
<b>CARD ERROR. PLEASE REFORMAT.</b>	SD card formatting has failed.
<b>CANNOT SET DPOF.</b>	Writing of the DPOF setting to the SD card has failed.
<b>CONTROL INFORMATION DIFFER. CANNOT USE THIS CARD IN VIDEO MODE.</b>	The data on the card differs from the Video Mode standard. Save the data on a PC and then format the card before use.
<b>SCENE IN PROTECTED PROGRAM OR PLAYLIST.</b>	You are attempting to erase a protected scene or a scene in a play list created on another device.
<b>LOW BATTERY.</b>	The battery is low. Recharge it. (P17)
<b>PUSH THE RESET SWITCH.</b>	An irregularity in the equipment has been detected. Remove the SD card then press the reset switch to restart the unit. (P101)

MANUAL	You have set the [AUTO/MANUAL/FOCUS] switch to [AUTO] and are attempting to set [SCENE MODE] from the menu screen.
PIX MODE.	You are attempting to set [SCENE MODE] from the menu screen while MAGICPIX is set. (P42)
D.	You are attempting to set [LCD AI] from the menu screen when the [POWER LCD] button has been pressed to brighten the LCD monitor.
	Check the connected printer.
	AC adaptor has not been connected or the battery has not been inserted while the unit is connected to the PC Connection mode.
	Cable is connected in the motion picture mode.
	has been selected from the PC Connection mode. USB cable was still connected.
	USB cable and ensure that the battery has been charged. Then connect the AC adaptor
	the USB cable remains connected for 5 minutes when a printer or the
	turned off which the unit is

### ■ About recovery

When the SD card was accessed, you tried to playback a file displayed as a thumbnail in shades of blue and white (P101) or faulty control information or a play list created on another device was read, a control information recovery message or play list delete message such as those shown below may be displayed. (After recovery starts, it may take time depending on the error.)

**REPAIRING CONTROL DATA. PLEASE  
CONNECT AC ADAPTOR.**



**DATA ERROR OCCURRED. REPAIR SD  
DATA NOW?**



**YES/NO**

**YES**

**When connecting to AC adaptor or the  
remaining capacity of the battery is  
enough:**  
[FINISHED]

**When the remaining capacity of the  
battery is low:**  
[PLEASE CONNECT AC ADAPTOR OR  
CHANGE BATTERY.]

**NO**

[CANNOT USE THIS CARD IN VIDEO  
MODE WITHOUT REPAIRING DATA  
ERROR.]

- When you recover files or delete play lists, you can record or play motion pictures again. Therefore, be sure to follow the instruction.
- When data recorded on another device is recovered, it may not be possible to play back the data on this unit or the other device. Always use this unit to recover data recorded on it.
- In the case that recovery fails, format the SD card with this unit (in still picture recording mode or still picture playback mode) or MotionSD STUDIO (P73).

**PLAYLIST ERROR. DELETE THIS  
PLAYLIST?/PLAYLIST ERROR. DELETE  
ALL PLAYLISTS?**



**YES/NO**

**YES**

**When connecting to AC adaptor or the  
remaining capacity of the battery is  
enough:**  
[FINISHED]

**When the remaining capacity of the  
battery is low:**  
[PLEASE CONNECT AC ADAPTOR OR  
CHANGE BATTERY.]

**NO**

[CANNOT USE THIS CARD IN VIDEO  
MODE WITHOUT REPAIRING DATA  
ERROR.]

## Functions that cannot be used simultaneously

Some functions in this unit are disabled or cannot be selected due to the unit's specifications. The table below shows examples of functions restricted by various conditions.

Functions	Conditions which disable the functions
Digital zoom MagicPix	<ul style="list-style-type: none"> <li>• In still picture recording mode</li> </ul>
Backlight compensation	<ul style="list-style-type: none"> <li>• When the MagicPix function is used</li> <li>• When the iris/gain is set</li> </ul>
Flash	<ul style="list-style-type: none"> <li>• In motion picture recording mode</li> <li>• During demo mode</li> </ul>
Scene mode	<ul style="list-style-type: none"> <li>• When setting the [AUTO/MANUAL/ FOCUS] switch to [AUTO]</li> <li>• When the MagicPix function is used</li> </ul>
Zoom	<ul style="list-style-type: none"> <li>• When the record button is pressed halfway in still picture recording</li> </ul>

Functions	Conditions which disable the functions
Change of white balance	<ul style="list-style-type: none"> <li>• When digital zoom (10× or higher) is used</li> <li>• When the MagicPix function is used</li> </ul>
Adjusting the shutter speed, iris/gain	<ul style="list-style-type: none"> <li>• When the MagicPix function is used</li> <li>• When the scene mode is used</li> </ul>
Deleting files	<ul style="list-style-type: none"> <li>• When the write protection switch on the SD card is set to [LOCK] (P15)</li> <li>• When the file is protected</li> </ul>
Formatting	<ul style="list-style-type: none"> <li>• When the write protection switch on the SD card is set to [LOCK] (P15)</li> </ul>
DPOF setting	
LOCK setting	

# Troubleshooting

Problem	Check points
This unit cannot be turned on.	<ul style="list-style-type: none"> <li>● <b>Is the battery fully charged?</b> → Charge the battery using the AC adaptor. (P17)</li> </ul>
This unit is turned off automatically.	<ul style="list-style-type: none"> <li>● <b>If you do not use the unit for approximately 5 minutes, the power is automatically turned off to conserve the battery charge. (P91) To resume recording, turn the power back on.</b> The power will not turn off automatically when the power save function (P91) is set to [OFF].</li> </ul>
This unit does not stay on long enough.	<ul style="list-style-type: none"> <li>● <b>Is the battery low?</b> → If the remaining battery power indication is flashing or the message "LOW BATTERY." is displayed, the battery has run down. Charge the battery. (P17)</li> </ul>
Battery runs down quickly.	<ul style="list-style-type: none"> <li>● <b>Is the battery fully charged?</b> → Charge it with the AC adaptor. (P17)</li> <li>● <b>Are you using the battery in an extremely cold place?</b> → The battery is affected by ambient temperature. In cold places, the operating time of the battery becomes shorter.</li> <li>● <b>Has the battery worn out?</b> → The battery has a limited life. If the operating time is still too short even after the battery is fully charged, depending on the usage, the battery has worn out and can no longer be used.</li> </ul>
<p>This unit cannot be operated though powered up.</p> <p>This unit does not operate normally.</p>	<ul style="list-style-type: none"> <li>● <b>Press the [RESET] button. (P101) If normal conditions are not restored yet, remove the battery or disconnect the AC adaptor, wait about 1 minute and then reinsert the battery or reconnect the AC adaptor. Then, about 1 minute later, turn on the power again. (Conducting the above operation when the access lamp is on may destroy the data on the SD card.)</b></li> </ul>
The remote control does not function.	<ul style="list-style-type: none"> <li>● <b>Has the button-type battery of the remote control run out?</b> → Replace it with a new button-type battery. (P13)</li> </ul>
The screen has changed suddenly.	<ul style="list-style-type: none"> <li>● <b>Has the demonstration started?</b> → If you set [DEMO MODE] to [ON] without inserting an SD card in motion picture recording mode or still picture recording mode, the unit is automatically set to the demonstration mode for introducing its functions. Normally this should be set to [OFF]. (P91)</li> </ul>

not open

14)

**Non picture recording:**

Used for motion picture

## ected?

d, focus is automatically adjusted.

Record a scene which is hard to bring into focus mode?

Recording subjects and surroundings for  
does not operate correctly. (P104) If  
us mode to adjust the focus. (P45)

ing, focusing shifts into the

Qual

lead the company to them. (P93)

me  
ot


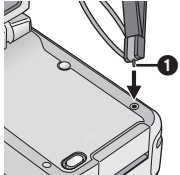

- If you set [SETUP]-[ ]-[ ] indications other than warnings will appear.

played  
the built-in  
this unit.

- **Is the volume too low?**  
→ During playback, move the volume indication and adjust the volume.

Problem	Check points
Although this unit is correctly connected to a TV, playback images cannot be seen.	<ul style="list-style-type: none"> <li>Have you selected video input on the TV? → Please read the operating instructions of your TV and select the channel that matches the input used for the connection.</li> </ul>
Playback image is not clear.  Sound breaks up or noise affects the picture and/or sound.	<ul style="list-style-type: none"> <li>Noise may interfere with the picture and/or sound when the multi cable terminal becomes dirty. Wipe off any dirt with a soft cloth, then connect to the multi-connector.</li> </ul>
Images played back on TV are cut.	<ul style="list-style-type: none"> <li>Depending on the TV connected, the sides of the images being played may not appear. We recommend widening the recording range of the objects you want to record beforehand.</li> </ul>
Recorded pictures are not clear.	<ul style="list-style-type: none"> <li>Are you trying to record small or finely detailed objects with [PICT.QUALITY] set at [ ]? → If you try to record small or finely detailed objects with [PICT.QUALITY] set at [ ], the images may break up into a mosaic-like pattern. Record with [PICT.QUALITY] set at [ ] instead. (P52)</li> </ul>
A scene recorded on an SD card cannot be deleted.	<ul style="list-style-type: none"> <li>Is the scene locked? → Locked scenes cannot be deleted. (P64)</li> <li>For the SD Memory Card, if its write protect switch is set to [LOCK], then deletion is disabled. (P15)</li> </ul>
The images on the SD card do not look normal.	<ul style="list-style-type: none"> <li>The data may be destroyed. It may have been destroyed by static or electromagnetic waves. Record important data on a PC or other equipment as well. (P80)</li> </ul>
During playback, [UNPLAYABLE CARD.] is displayed.	<ul style="list-style-type: none"> <li>Data with different formats or destroyed data is being played back.</li> </ul>
The indication disappears.  The screen is frozen.  No operation can be performed.	<ul style="list-style-type: none"> <li>Turn off the power to this unit. If the power cannot be turned off, press the [RESET] button. You can also remove the battery and then reinsert it or disconnect the AC adaptor and then reconnect it. After that, turn on the power again. If normal operation is still not restored, detach the power connected, and consult the dealer who you purchased this unit from.</li> </ul>
Even if an SD card is formatted, it cannot be used.	<ul style="list-style-type: none"> <li>Either this unit or the SD card may be damaged. Please consult a dealer.</li> </ul>



Problem	Check points
The scenes are not correctly displayed in thumbnails.	<ul style="list-style-type: none"> <li>Scenes displayed as thumbnails in shades of blue and white cannot be played back or deleted. If the scenes are unnecessary, format the SD card to erase the data.</li> <li>Please be aware that if an SD card is formatted, then all the data recorded on the card will be erased. Store important data on a PC, etc. When saving scenes recorded using this unit to a PC, you must use MotionSD STUDIO. (P73)</li> </ul> 
"PUSH THE RESET SWITCH." is displayed.	<ul style="list-style-type: none"> <li>The unit has automatically detected an error. To protect the data, remove the SD card and then press the [RESET] button with the projecting part ❶ of the hand strap. This will restart the unit. When you press the [RESET] button, the date and time setting will also be reset. Set the date and time again.</li> <li>Even after you press the [RESET] button, the indication may still appear repeatedly. If so, this unit needs repair. Detach the power connected, and consult the dealer who you purchased this unit from. Do not attempt to repair the appliance by yourself.</li> </ul> 
Even if connected by the USB cable, this unit is not recognized by the PC.	<ul style="list-style-type: none"> <li>Have you installed the Web camera driver? → Install the driver, then check the connections.</li> <li>Have you set this unit to the correct mode? → The unit is not recognized if it is set to motion picture playback mode. (P80)</li> <li>Select another USB terminal on the PC.</li> <li>Check the operating environment. (P75, 76)</li> <li>Turn on the power to this unit.</li> </ul>
When the USB cable is disconnected, an error message will appear on PC.	<ul style="list-style-type: none"> <li>To disconnect the USB cable safely, double-click the  icon in the task tray and follow the instructions on the screen.</li> </ul>
The warning/alarm indication [°] appears when this unit is operated in the WEB camera mode.	<ul style="list-style-type: none"> <li>Did you press the record button or any other button? → You cannot record onto the card in the WEB camera mode.</li> <li>Have you installed the Web camera driver? → Install the driver, then check the connections.</li> </ul>
The [PictBridge] indication flashes when this unit is connected to a PC.	<ul style="list-style-type: none"> <li>The unit is connected to a Windows XP PC in still picture playback mode. → Connect with a printer supporting PictBridge.</li> </ul>
The [WEB] indication appears when the unit is connected to the printer.	<ul style="list-style-type: none"> <li>The unit is connected to the printer in motion picture recording mode or still picture recording mode. → Change the mode to still picture playback mode.</li> </ul>

## About condensation

When condensation forms on the unit, the lens will cloud up and the unit may not work properly. Make every effort to ensure that condensation does not form. If it does form, take the actions described below.

### Causes of condensation

**Condensation takes place when the ambient temperature or humidity is changed as follows.**

- When this unit is brought inside from the cold (e.g. a ski slope) to a warm room.
- When this unit is moved from an air-conditioned car to outside.
- When a cold room has been warmed up quickly.
- When cool wind from an air conditioner is directly blown onto this unit.
- After summer afternoon showers of rain.
- When this unit is in a very humid place where the air is thick with steam. (e.g. a heated swimming pool)

**When this unit is taken to a location with a significant temperature difference such as from a cold place to a hot place.**

If, for example, you have used this unit for recording on a ski slope and are taking it into a heated room, place the unit inside a plastic bag, remove as much of the air from inside the bag as possible, then seal the bag. Leave the unit for about an hour in the room so the temperature of the unit is close to the ambient temperature of the room, then use it.

### What to do with the lens is fogged up.

Remove the battery or disconnect the AC adaptor and leave the unit for about 1 hour. When the unit becomes close to the ambient temperature, the fog disappears naturally.

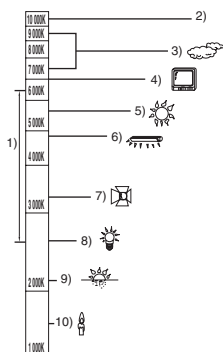
# Explanation of terms

## Automatic white balance

White balance adjustment recognizes the colour of light and adjusts so the white colour will become a purer white. The unit determines the hue of light that comes through the lens and white balance sensor, thereby judging the recording condition, and selects the closest hue setting.

This is called automatic white balance adjustment.

However, since the unit only stores white colour information under several light sources, automatic white balance adjustment does not function normally under other light sources.



The illustration above shows the range over which the auto white balance functions.

- 1) The effective range of automatic white balance adjustment on this unit
- 2) Blue sky
- 3) Cloudy sky (rain)
- 4) TV screen
- 5) Sunlight
- 6) White fluorescent lamp
- 7) Halogen light bulb
- 8) Incandescent light bulb
- 9) Sunrise or sunset
- 10) Candlelight

Outside of the effective range of automatic white balance adjustment, the

image will become reddish or bluish.

Even within the effective range of automatic white balance adjustment, the automatic white balance adjustment may not function properly if there is more than one light source. For light outside the functional auto white balance adjustment range, use the manual white balance adjustment mode.

## White balance

The images recorded by the unit may become bluish or reddish under the influence of certain light sources. To avoid such phenomena, adjust the white balance.

White balance adjustment determines the white colour under different light sources. By recognizing which is the white colour under sunlight and which is the white colour under a fluorescent light, the unit can adjust the balance among the other colours.

Since the white colour is the reference for all the colours (that make up light), the unit can record pictures in a natural hue if it can recognize the reference colour white.

### **Auto focus**

The lens is moved forward or backward automatically to bring the subject into focus.

#### **Auto focus has the following characteristics.**

- Adjusts so that the vertical lines of a subject are seen more clearly.
- Attempts to bring an object with higher contrast into focus.
- Focuses on the screen center only.

Due to these characteristics, auto focus does not work correctly in the following situations. Record pictures in the manual focus mode.

#### **Recording distant and close-up objects at the same time**

Since the unit focuses on whatever is at the center of the screen, it is difficult to bring the background into focus when close-up objects are placed in focus. When recording people with distant mountains in the background, you cannot focus on both the subject which is close-up and the objects which are in the distance.

#### **Recording a subject behind dirty or dusty window**

The subject behind the window will not be focused because the focus is on the dirty window.

Similarly, when recording something on the opposite side of a road with heavy traffic, a vehicle that happens to pass by may be brought into focus.

#### **Recording a subject that is surrounded by objects with glossy surfaces or by highly reflective objects**

Since whatever is shiny or glistens is brought into focus, it is hard to focus on the subject to be recorded. The focus may become blurry when recording subjects at the seashore, in night views or in scenes involving fireworks or special lights.

#### **Recording a subject in dark surroundings**

The unit cannot focus correctly because the light information that comes through the lens decreases considerably.

#### **Recording a fast-moving subject**

As the focus lens-inside moves mechanically, it cannot keep up with a fast-moving subject.

When, for example, recording a sports event with fast moving subjects, the focus may lose its sharpness.

#### **Recording a subject with little contrast**

It is easy to bring subjects with a sharp contrast or vertical lines or stripes into focus. This means that a subject with little contrast, such as a white wall, may become blurry because the unit achieves focus based upon the vertical lines of an image.

### **Concerning MPEG2 motion pictures**

“MPEG” stands for Moving Pictures Experts Group. It refers to a format for compressing video.

MPEG2 enables motion pictures to be played back more smoothly and attractively by sending the image data at a rate of 30 frames per second.

**Read the operating instructions before use.**

- The unit and SD Memory Card become warm after long operation, but this is not a malfunction.

**Keep the unit away from magnetized equipment/mobile phones, microwave ovens, TVs and video game equipment.**

- If you use the unit on or near a TV, the images or sound may be disturbed due to electromagnetic wave radiation.
- Do not use near cell phone because doing so may cause noise to adversely affect the picture and sound.
- Recordings may be damaged, or images may be distorted, by the strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by digital circuits including microprocessors may adversely affect the unit, causing the disturbance of images and sounds.
- If the unit is affected by such equipment and does not function properly, remove the battery or disconnect the AC adaptor. Then insert the battery again or connect the AC adaptor again.

**Do not use the unit near radio transmitters or high-voltage cables.**

- If you record pictures near radio transmitters or high-voltage cables, recorded images or sounds may be adversely affected.

**Make sure to use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.**

**Do not extend the cords and the cables.**

**Do not spray insecticides or volatile chemicals onto the unit.**

- If the unit is sprayed with such chemicals, its body may be marred and the surface finish may peel off.

- Do not leave rubber or plastic products in contact with the unit for a long time.

**When you use the unit in a sandy or dusty place such as a beach, do not let sand or fine dust get into the body and terminals of the unit.**

**Also, keep the unit away from sea water.**

- Sand or dust may damage the unit. (Care should be taken when inserting and removing an SD card.)
- If sea water splashes onto the unit, wipe off the water with a well rung cloth. Then wipe the unit again with a dry cloth.

**When carrying the unit, do not drop or bump it.**

- A strong impact can break the unit's casing, causing it to malfunction.

**Do not use benzine, paint thinner or alcohol for cleaning the unit.**

- Before cleaning, detach the battery or pull out the AC mains lead from the AC mains socket.
- The camera body may be discoloured and the surface finish may peel off.
- Wipe the unit with a soft dry cloth to remove dust and fingerprints. To remove stubborn stains, thoroughly ring a cloth that has been soaked in a neutral detergent diluted with water and wipe the unit with it. Afterwards, wipe it with a dry cloth.
- When you use a chemical dust cloth, follow the instructions.

**Do not use the unit for surveillance purposes or other business uses.**

- If you use the unit for a long time, heat will build up inside it and ~~2~~(i)104ild up inside (T1.2)p

### About the battery

The battery used in this unit is a rechargeable lithium-ion battery. It is susceptible to humidity and temperature and the effect increases the more the temperature rises or falls. In cold areas, the full charge indication may not appear or the low battery indication may appear about 5 minutes after starting use. At high temperatures, the protection function may be triggered, making it impossible to use the unit.

#### **Be sure to detach the battery after use.**

- If the battery is left inserted, a minute amount of current continues to flow even if the unit's power is off. Keeping the unit in this state may result in over discharge of the battery. The battery may become unusable after it is charged.

#### **Prepare spare batteries when going out for recording.**

- In cold places such as a ski resort, the period during which you can record pictures is shortened.
- When you travel, do not forget to bring an AC adaptor (supplied) so that you can recharge the batteries at your destination.

#### **If you drop the battery accidentally, check to see if the terminals are damaged.**

- Attaching a battery with damaged terminals can damage the unit.

#### **Tips for storing the battery**

- The battery should be stored in the vinyl bag so metal does not come into contact with the terminals.
- The battery should be stored in a cool place free from humidity, with as constant temperature as possible. (Recommended temperature: 15 °C to 25 °C (59 °F to 77 °F), Recommended humidity: 40% to 60%)
- Extremely high temperatures or low temperatures will shorten the life of the battery.

- If the battery is kept in high-temperature, high-humidity, or oily-smoky places, the terminals may rust and cause malfunctions.
- To store the battery for a long period of time, we recommend you charge it once every year and store it again after you have completely used up the charged capacity.
- Dust and other matter attached to the battery terminals should be removed.

#### **Do not throw old battery into fire.**

- Heating a battery or throwing it into a fire may result in an explosion.
- If the operating time is very short even after the battery has been recharged, the battery has worn out. Please purchase a new battery.

### About the AC adaptor

- Be sure to use the supplied AC adaptor.
- If you use the AC adaptor near a radio, radio reception may be disturbed. Keep the AC adaptor 1 m (3.3 feet) or more away from the radio.
- When using the AC adaptor, it may generate whirring sounds. However, this is normal.
- After use, be sure to disconnect the AC adaptor. (If it is left connected, about 0.1 W of current is consumed at most.)
- Always keep the electrodes of the AC adaptor and battery clean.

#### **Put this unit near the outlet to make it easy for the interrupting device (plug) to reach it.**

#### **About charging errors**

**When the status indicator flashes rapidly or slowly, one of the following situations may be to blame.**

**When the status indicator flashes at intervals of about 6 seconds (on for about 3 sec. and off for about 3 sec.):**

- The battery may have excessively discharged. It can be recharged but in some cases it may take several hours until regular charging commences.

**When the status indicator flashes at intervals of about 0.5 second (on for about 0.25 sec. and off for about 0.25 sec.):**

- The battery has not been recharged. Remove the battery from the unit, and try charging it again.
- The battery temperature or ambient temperature may be extremely high or low. Wait until the appropriate temperature is restored before charging the battery again. If the battery still fails to charge, something may be wrong with the unit, battery, AC adaptor etc. Contact your dealer.

**When the status indicator is off:**

- Charging is completed.
- Although charging is completed, trouble may have occurred in the AC adaptor or battery when the status indicator is off. Contact your dealer.

## About the SD card

- The memory capacity indicated on the label of an SD Card is the total of the capacity for copyright protection and management and the capacity which can be used on the unit, a PC etc.
- During prolonged use, the unit's surfaces and the SD card will heat up slightly: This is normal.



**When inserting or removing the SD card, always set the [ON/OFF] switch to [OFF].**

**When the access lamp is illuminated (During access to the SD card), do not open the card slot cover to pull out the SD card, turn off the power, or cause any vibrations or impacts.**

**Do not leave the SD card in places where there is high temperature or direct sunlight, or where electromagnetic waves or static electricity are easily generated. Moreover, do not fold or drop the SD card, and do not strongly vibrate it.**

- The SD card may break or the contents of the card may be destroyed or erased.

**After use, be sure to eject the SD card, and store it away.**

- After use, or when storing or carrying the SD card, put it in the storage case (supplied).
- Do not allow dust, water, or foreign substances to adhere to the terminals on the back of the SD card. Moreover, do not touch the terminals with your hand.
- Keep the SD Memory Card out of reach of children to prevent swallowing.

## LCD monitor

- When the LCD monitor gets dirty, wipe it with a dry soft cloth.
- In a place with drastic temperature changes, condensation may form on the LCD monitor. Wipe it with soft dry cloth.
- When the unit has become very cold, for example due to storage in a cold area, its LCD monitor will be slightly darker than usual immediately after the power is turned on. The normal brightness will be restored when the unit's internal temperature rises.

Extremely high precision technology is employed to produce the LCD Monitor screen featuring a total of approximately 210,000 pixels. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

# Specifications

## SD Video Camera: Information for your safety

**Power source:** DC 9.3 V (AC adaptor)/7.4 V (Battery)

**Power consumption:** When recording: 3.9 W (AC adaptor)/3.5 W (Battery)

<b>Signal system</b>	EIA Standard: 525 lines, 60 fields NTSC color signal
<b>Image sensor</b>	1/6-inch 3CCD image sensor Total pixels approx. 800 K×3 Effective pixels Motion picture: approx. 640 K×3 (4:3)/ approx. 540 K×3 (16:9) Still picture: approx. 710 K×3 (4:3)/ approx. 540 K×3 (16:9)
<b>Lens</b>	Auto iris, 10× power zoom F1.8 to F2.8 (f = 3.0 mm to 30.0 mm) <b>35 mm equivalent</b> Motion picture: 45.6 mm to 456 mm (4:3)/ 46.7 mm to 467 mm (16:9) Still picture: 43.4 mm to 434 mm (4:3)/ 47.0 mm to 470 mm (16:9) Tele-macro function provided (full range AF)
<b>Filter diameter</b>	37 mm
<b>Zoom</b>	10× optical zoom, 25/700× digital zoom
<b>Monitor</b>	2.8" wide LCD monitor (approx. 210 K pixels)
<b>Microphone</b>	Stereo (with a zoom function)
<b>Speaker</b>	1 dynamic type
<b>White balance adjustment</b>	Auto tracking white balance system
<b>Standard illumination</b>	1,400 lx
<b>Minimum required illumination</b>	12 lx (1 lx in MagicPix mode)
<b>Recording media</b>	SD Memory Card (8 MB/16 MB/32 MB/64 MB/128 MB/ 256 MB/512 MB/1 GB/2 GB (Maximum)) (FAT12 and FAT16 format corresponding)
<b>Video output level</b>	1.0 Vp-p 75 Ω
<b>S-Video output level</b>	Y Output: 1.0 Vp-p, 75 Ω C Output: 0.286 Vp-p, 75 Ω
<b>Audio output level (Line)</b>	316 mV, 600 Ω
<b>Headphones output level</b>	77 mV, with 32 Ω load



<b>USB</b>	Card reader/writer function (No copyright protection support) USB 2.0 compliant (Hi-Speed) PictBridge-compliant Web Camera function
<b>Flash</b>	GN 4.5 Available flash range: approx. 1 m to 2 m (3.3 feet to 6.6 feet)
<b>Dimensions</b>	Approx. 49.9 mm (W) × 96.7 mm (H) × 80.4 mm (D) Approx. 1 31/32 inch (W) × 3 13/16 inch (H) × 3 3/16 inch (D) (excluding the projecting parts)
<b>Mass</b>	Approx. 242 g (8.54 oz)
<b>Mass in operation</b>	Approx. 282 g (9.95 oz) (with supplied battery and SD Memory Card)
<b>Operating temperature</b>	0 °C to 40 °C (32 °F to 104 °F)
<b>Operating humidity</b>	10% to 80%
<b>Battery operation time</b>	See page 17.

### Motion pictures

<b>Compression</b>	MPEG2 (SD-Video standard compliant)
<b>Picture size</b>	704×480
<b>Transfer rate</b>	<b>XP</b> : Approx. 10 Mbps (VBR), 30 fps <b>SP</b> : Approx. 5 Mbps (VBR), 30 fps <b>LP</b> : Approx. 2.5 Mbps (VBR), 30 fps
<b>Audio compression</b>	MPEG1-Layer2 compliant (stereo)

### Still pictures

<b>Compression</b>	JPEG (Design rule for Camera File system, based on Exif 2.2 standard), DPOF corresponding
<b>Picture size</b>	2048×1512, 1280×960, 640×480, 1920×1080 (HDTV)

### WEB camera

<b>Compression</b>	Motion JPEG-compliant
<b>Picture size</b>	320×240 pixels (QVGA)
<b>Frame rate</b>	Approx. 6 fps

### AC adaptor: Information for your safety

<b>Power source:</b>	AC 100 V to 240 V, 50/60 Hz
<b>Input capacitance:</b>	0.25 A
<b>Output:</b>	DC 9.3 V 1.0 A

### Battery pack: Information for your safety

<b>Maximum voltage:</b>	DC 8.4 V
<b>Nominal voltage:</b>	DC 7.4 V
<b>Rated capacitance:</b>	760 mAh

## Limited Warranty (For USA Only)

**Panasonic Consumer Electronics Company, Division of Panasonic Corporation of North America**  
One Panasonic Way, Secaucus, New Jersey 07094

Panasonic Puerto Rico, Inc.  
Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985

### **PANASONIC SD Products Limited Warranty**

#### **Limited Warranty Coverage**

If your product does not work properly because of a defect in materials or workmanship, Panasonic Consumer Electronics Company or Panasonic Puerto Rico, Inc. (collectively referred to as "the warrantor") will, for the length of the period indicated on the chart below, which starts with the date of original purchase ("warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.

Product or Part Name	Parts	Labor
SD Multi AV Device, SD Mobile Printer (except items listed below)	One (1) year	Ninety (90) days
CCD Image Sensor	Six (6) months	Ninety (90) days
Rechargeable Battery Pack, SD Memory Card, AC Adaptor, USB Reader-Writer (in exchange for defective item)	Ninety (90) days	Not Applicable

During the "Labor" warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must carry-in or mail-in your product during the warranty period. If non-rechargeable batteries are included, they are not warranted. This warranty only applies to products purchased and serviced in the United States or Puerto Rico. This warranty is extended only to the original purchaser of a new product which was not sold "as is".

A purchase receipt or other proof of the original purchase date is required for warranty service.

#### **Carry-In or Mail-In Service**

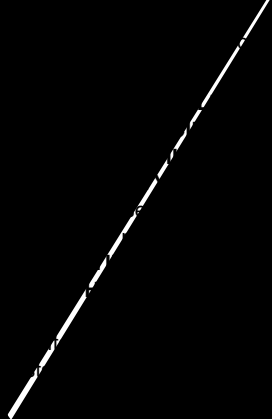
For Carry-In or Mail-In Service in the United States call 1-800-272-7033.

For assistance in Puerto Rico call Panasonic Puerto Rico, Inc.

(787)-750-4300 or fax (787)-768-2910.

#### **Limited Warranty Limits And Exclusions**

This warranty ONLY COVERS failures due to defects in materials or workmanship, and DOES NOT COVER normal wear and tear or cosmetic damage. The warranty ALSO DOES NOT COVER damages which occurred in shipment, or failures which are caused by products not supplied by the warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or commercial use (such as in a hotel, office, restaurant, or other business), rental use of the product,



# Customer Services Directory (For USA Only)

For Product Information, Operating Assistance, Literature Request, Dealer Locations, and all Customer Service inquiries please contact:

**1-800-272-7033**, Monday-Friday 8:30am-8pm EST.

**Web Site:** <http://www.panasonic.com/consumersupport>

You can purchase parts, accessories or locate your nearest servicer by visiting our Web Site.

## Accessory Purchases:

Purchase Parts, Accessories and Instruction Books online for all Panasonic Products by visiting our Web Site at:

**<http://www.pasc.panasonic.com>**

or, send your request by E-mail to:

[npcparts@us.panasonic.com](mailto:npcparts@us.panasonic.com)

You may also contact us directly at:

**1-800-332-5368 (Customer Orders Only)**

**Panasonic Services Company 20421 84th Avenue South, Kent, WA 98032**

**(6 am to 5 pm Monday - Friday; 6 am to 10:30 am Saturday; PST)**

**(Visa, MasterCard, Discover Card, American Express, Check)**

## Product Repairs

### Centralized Factory Servicer

MAIL TO :

Panasonic Services Company

410B Airport Road

Elgin, IL 60123

Attention: Digital Camcorder Repair Dept.

Please carefully pack and ship, prepaid and insured, to the Elgin Centralized Factory Servicer.

Customer's in Puerto Rico, please ship or carry in to location below ("Service in Puerto Rico").

### Service in Puerto Rico

Panasonic Puerto Rico, Inc.:

Ave. 65 de Infantería, Km. 9.5, San Gabriel Industrial Park, Carolina, Puerto Rico 00985

Phone (787) 750-4300 Fax (787) 768-2910

As of November 2004

Please photocopy this form when making a request for service notice, in the unlikely event this product needs service.

## Request for Service Notice:

- Please include your **proof of purchase**.  
(Failure to do so will delay your repair.)
  - To further speed your repair, please provide an explanation of what is wrong with the unit and any symptom it is exhibiting.
- 
- 
- 

Mail this completed form and your Proof of Purchase along with your unit to:  
Panasonic Services Company  
410B Airport Road  
Elgin, IL 60123  
Attn: Digital Camcorder Repair Dept.

Please write the displayed above Self Diagnostic number here.

# Warranty (For Canadian Customers)

## FOR CANADA

Panasonic Canada Inc.

### PANASONIC PRODUCT – LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship and agrees to remedy any such defect for a period as stated below from the date of original purchase.

<b>SD Video Camera</b>	<b>One (1) year, parts and labour</b>
<b>Digital Photo Peripherals</b>	<b>One (1) year, parts and labour</b>
<b>SD Video Camera Accessories</b>	<b>Ninety (90) days, parts and labour</b>

In-home Service will be carried out only to locations accessible by roads and within 50 km of an authorized Panasonic service facility.

#### LIMITATIONS AND EXCLUSIONS

This warranty does not apply to products purchased outside Canada or to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or repaired in any way that affects the reliability or detracts from the performance, nor does it cover any product which is used commercially. Dry cell batteries are also excluded from coverage under this warranty.

This warranty is extended to the original end user purchaser only. A purchase receipt or other proof of date of original purchase is required before warranty service is performed.

**THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

**IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES.**

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable.

#### WARRANTY SERVICE

**FOR PRODUCT OPERATION ASSISTANCE**, please contact:

Our Customer Care Centre:

Telephone #: (905) 624-5505      1-800 #: 1-800-561-5505

Fax #: (905) 238-2360

Email link: "Contact Us" on [www.panasonic.ca](http://www.panasonic.ca)

**FOR PRODUCT REPAIRS**, please locate your nearest Authorized Servicentre at [www.panasonic.ca](http://www.panasonic.ca) :

Link : "Servicentres™ locator" under "Customer support"

Panasonic Factory Service:

#### Richmond, British Columbia

Panasonic Canada Inc.  
12111 Riverside Way  
Richmond, BC V6W 1K8  
Tel: (604) 278-4211  
Fax: (604) 278-5627

#### Mississauga, Ontario

Panasonic Canada Inc.  
5770 Ambler Drive  
Mississauga, ON L4W 2T3  
Tel: (905) 624-8447  
Fax: (905) 238-2418

#### IF YOU SHIP THE PRODUCT TO A SERVICENTRE

Carefully pack and send prepaid, adequately insured and preferably in the original carton.  
Include details of the defect claimed, and proof of date of original purchase.

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■ **Cómo**

Antes de

Si se in  
funcion

1

2

3

■ **Cómo insertar/quitar la batería**

1

**Quite la tapa de la batería.**

- ① Mientras aprieta la tapa de la batería,
- ② deslícela en la dirección de la flecha.

2

**Inserte la batería.**

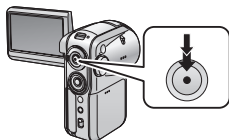
- ① Coloque la etiqueta de la batería con la cara hacia arriba.
  - ② Inserte las partes salientes de la batería en los orificios en la unidad.
  - ③ Vuelva a poner la tapa de la batería en su lugar.
- Ⓐ Etiqueta  
Ⓑ Partes salientes







3



**Pulse completamente el botón de grabación (hasta el máximo) para grabar.**

## ■ Reproducción de imágenes dinámicas

1



**Gire el selector de modo para seleccionar .**

La tapa del objetivo se cierra automáticamente.


2




**Pulse los botones de las flechas hacia arriba, hacia abajo, hacia la izquierda o hacia la derecha para llevar a cabo las distintas operaciones.**

Reproducción/Pausa: Pulse .

Reproducción de revisión: Siga pulsando .


Reproducción a partir de un punto marcado: Siga pulsando .

Para detener la reproducción y mostrar las miniaturas: Pulse .

## ■ Reproducción de imágenes fijas

1




**Gire el selector de modo para seleccionar .**


La tapa del objetivo se cierra automáticamente.


2




**Pulse los botones de las flechas hacia arriba, hacia abajo, hacia la izquierda o hacia la derecha para llevar a cabo las distintas operaciones.**

: La exposición de diapositivas (reproducción de las imágenes en la tarjeta SD en orden numérico) inicia/se interrumpe.\*

: Reproduce la imagen anterior.

: Reproduce la imagen siguiente.

: Detiene la reproducción y muestra las miniaturas.

\* Solo si se ha seleccionado SLIDE SHOW.

**Panasonic Consumer Electronics Company,**  
**Division of Panasonic Corporation of North America**  
One Panasonic Way, Secaucus, NJ 07094

**Panasonic Puerto Rico, Inc.**  
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